HEALTH TECHNOLOGY CASE STUDY 22:

The Effectiveness and Costs of Alcoholism Treatment

MARCH 1983

This case study was performed as a part of OTA's Assessment of

Medical Technology and
Costs of the Medicare Program

CASE STUDY SERIES

CONGRESS OF THE UNITED STATES
Office of Technology Assessment
Washington, D.C. 20510

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Costs of the Medicare Program

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OTA Case Studies are documents containing information on a specific medical technology or area of application that supplements formal OTA assessments. The material is not normally of as immediate policy interest as that in an OTA Report, nor does it present options for Congress to consider.

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Preface

The Effectiveness and Costs of Alcoholism Treatments is Case Study #22 in OTA's Health Technology Case Study Series. It was prepared in response to a request by the Senate Finance Committee, Subcommittee on Health, and is part of OTA's project on *Medical Technology and Costs of the Medicare Program,* requested by the House Committee on Energy and Commerce and its Subcommittee on Health and the Environment. A listing of other case studies in the series is included at the end of this preface.

OTA case studies are designed to fulfill two functions. The primary purpose is to provide OTA with specific information that can be used in forming general conclusions regarding broader policy issues. For example, the first 19 cases in the Health Technology Case Study Series were conducted as part of OTA's overall project on *The Implications of Cost-Effectiveness Analysis of Medical Technology*. By examining the 19 cases as a group and looking for common problems or strengths in the techniques of cost-effectiveness or cost-benefit analysis, OTA was able to better analyze the potential contribution that those techniques might make to the management of medical technology and health care costs and quality.

The second function of the case studies is to provide useful information on the specific technologies covered. The design and the funding levels of most of the case studies are such that they should be read primarily in the context of the associated overall OTA projects. Nevertheless, in many instances, the case studies do represent extensive reviews of the literature on the efficacy, safety, and costs of the specific technologies and as such can stand on their own as a useful contribution to the field.

Case studies are selected either because they have been specifically requested by congressional committees or because they were chosen as part of the analytical method in carrying out an assessment. Selection criteria were developed to ensure that case studies provide examples:

- of types of technologies by function (preventive, diagnostic, therapeutic, and rehabilitative);
- of types of technologies by physical nature (drugs, devices, and procedures);
- of technologies in different stages of development and diffusion (new, emerging, and established);
- from different areas of medicine (such as general medical practice, pediatrics, radiology, and surgery);
- addressing medical problems that are important because of their high frequency or significant impacts (such as cost);
- of technologies with associated high costs either because of high volume (for low-cost technologies) or high individual costs;
- that could provide information material relating to the broader policy and methodological issues being examined in the particular overall project; and
- with sufficient scientific literature.

Case studies are either prepared by OTA staff or are commissioned by OTA and performed under contract by experts, generally in academia. Each case study is subjected to an extensive review process. Initial drafts of cases are reviewed by OTA staff and by members of the advisory panel to the associated project. For commissioned cases, comments are provided to authors, along with OTA's suggestions for revisions. Subsequent drafts are sent by OTA to numerous experts for review and comment.

Case studies contain findings and conclusions but do not include policy options. Development and presentation of options are done only in reports of major OTA assessments.

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22	The Effectiveness and Costs of Alcoholism Treatment; Leonard Saxe, Denise Dougherty, Katharine Esty, and Michelle Fine (OTA-HCS-22)

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[b]Original publication numbers appear in parentheses.

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[e]Background Paper #5 to *The Implications of Cost-Effectivess Analysis of Medical Technology*.

[f]Background Paper #1 to OTA's May 1982 report *Technology and Handicapped People*.

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Glossary of Terms

Alcohol abuse: Drinking pattern in which, either on a regular basis or irregular basis, alcohol consumption is above average and is associated with problems such as arrest for drinking while intoxicated or decline in job performance.

Alcoholism: A general term used to refer to abuse of ethanol substances. From a medical perspective, alcoholism typically refers to dependence thought to have a physiological basis. The term is also used to denote use of alcohol as it relates to significant social or other problems (including problems of criminal behavior and inability to function productively).

Antabuse®: Brand name for the drug, disulfiram, which is used as an adjunct in both inpatient and outpatient treatment programs and in conjunction with a number of therapies. Under the influence of this drug, patients who ingest alcohol become ill.

Aversion therapy: Treatment of alcoholism and alcohol abuse in which the ingestion of alcohol following classical conditioning is paired with an aversive stimulus or event (e.g., vomiting, electrical shock, or thoughts of bad consequences) so that the ingestion of alcohol itself eventually evokes aversive thoughts and/or responses. Techniques include the use of chemicals (such as emetine) and electroshock.

Cost-benefit analysis (CBA): An analytical technique that compares the costs of a project or technological application to the resultant benefits, with both costs and benefits expressed by the same measure. This measure is nearly always monetary.

Cost-effectiveness analysis (CEA): An analytical technique that compares the costs of a project or of alternative projects to the resultant benefits, with costs and benefits/effectiveness expressed by different measures. Costs are usually expressed in dollars, but benefits/effectiveness are ordinarily expressed in terms such as "lives saved," "disability avoided," "quality-adjusted life years saved," or any other relevant objectives. Also, when benefits/effectiveness are difficult to express in a common metric, they may be presented as an "array."

CEA/CBA: A composite term referring to a family of analytical techniques that are employed to compare costs and benefits of programs or technologies. The term as used in this assessment means "cost-effectiveness analysis/cost-benefit analysis."

Delirium tremens (DTs): A syndrome associated with alcohol withdrawal that includes a clouding of consciousness, difficulty in sustaining attention, disorientation, and autonomic hyperactivity.

Drug: Any chemical or biological substance that may be applied to, ingested by, or injected into humans in order to prevent, treat, or diagnose disease or other medical conditions.

Effectiveness: Same as efficacy (see below) except that is refers to average or actual conditions of use.

Efficacy: The probability of benefit to individuals in a defined population from a medical technology applied for a given medical problem under ideal conditions of use.

Incidence: In epidemiology, the number of cases of disease, infection, or some other event having its onset during a prescribed period of time, in relation to the unit of population in which it occurs. Incidence is a measure of morbidity or other events as they happen over a period of time.

Inpatient care: Care that includes an overnight stay in a medical facility. For alcoholism inpatient care, settings include alcoholism detoxification units and rehabilitation units within general hospitals, alcoholism treatment units within State and private psychiatric hospitals, and specialized alcoholism hospitals.

Intermediate care: Residential programs that provide primarily rehabilitation services to clients. For alcoholism intermediate care, settings include halfway houses, quarterway houses, and recovery homes that are typically community-based, peer-group oriented residences providing food, shelter, and supportive services in a nondrinking atmosphere.

Outpatient care: Care that does not include an overnight stay in the facility in which care is provided. For alcoholism outpatient care, settings include (but are not limited to) private physicians' offices, community mental health centers, free-standing outpatient clinics, alcoholism treatment centers, and vocational rehabilitation clinics.

Prevalence: In epidemiology, the number of cases or disease, infected persons, or persons with disabilities or some other condition present at a particular time, in relation to the size of the population. Prevalence is a measure of morbidity at a point in time.

Randomized clinical trial (RCT): An experimental design by which human subjects are randomly assigned either to an experimental group (in which subjects receive the treatment being studied) or to a control group (in which subjects do not receive the treatment being studied). Also referred to as "randomized controlled clinical trial or "controlled clinical trial."

Reliability: A measure of the consistency of a method in producing results. A reliable test gives the same results when applied more than once under the same conditions. Also called "precision."

Risk: A measure of the probability of an adverse or

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untoward outcome and the severity of the resultant harm to health of individuals in a defined population and associated with use of a medical technology applied for a given medical problem under specified conditions of use.

Safety: A judgment of the acceptability of risk (see above) in a specified situation.

Tolerance: The need for markedly increased amounts of alcohol to achieve the desired effect, or the diminished effect from regular use of the same amount.

Validity: A measure of the extent to which an observed situation reflects the "true" situation. *Internal validity* is a measure of the extent to which study results reflect the true relationship of a "risk factor" (e.g., treatment or technology) to the outcome of interest in study subjects. *External validity* is a measure of the extent to which study results can be generalized to the population that is represented by individuals in the study, assuming that the characteristics of that population are accurately specified.

Withdrawal: A reaction to noningestion of alcohol; characterized by symptoms such as morning "shakes" and malaise relieved by drinking.

Glossary of Acronyms

AA	— Alcoholics Anonymous
ADAMHA	— Alcohol, Drug Abuse, and Mental Health Administration (PHS)
ATC	— Alcoholism Treatment Center (NIAAA)
BAL	— blood alcohol level
CBA	— cost-benefit analysis
CEA	— cost-effectiveness analysis
CHAMPUS	— Civilian Health and Medical Program of the Uniformed Services (Department of Defense)
DHHS	— Department of Health and Human Services
DTs	— delirium tremens
DWI	— driving while intoxicated
FDA	— Food and Drug Administration (PHS)
GAO	— General Accounting Office (U.S. Congress)
GHAA	— Group Health Association of America
HCFA	— Health Care Financing Administration (DHHS)
HMO	— health maintenance organization
IBTA	— Individualized Behavior Therapy for Alcoholics
NDATUS	— National Drug and Alcoholism Treatment Utilization Survey
NIAAA	— National Institute on Alcohol Abuse and Alcoholism (ADAMHA)
OTA	— Office of Technology Assessment (U.S. Congress)
RCT	— randomized clinical trial
PHS	— Public Health Service (DHHS)
VA	— Veterans Administration

1.
Summary

1. Summary

In recent years, mounting evidence has confirmed that alcoholism and alcohol abuse* are involved in a host of medical, psychological, and social problems that engender major economic costs for the country. At the same time, efforts to treat alcoholism in the health care system have expanded greatly—and although only a small proportion of alcoholics or alcohol abusers actually receive treatment, the aggregate costs of treatment have risen substantially. In 1982, Medicare alone spent an estimated $150 million for the treatment of alcoholism. As congressional debate over rising health care costs has intensified, questions have been raised about whether the treatments provided are effective. Such questions have important implications for whether Medicare and other Government support for the existing treatment system should be expanded or be contracted.

This case study on the effectiveness and costs of alcoholism treatment was prepared as part of OTA's project on "Medical Technology and Costs of the Medicare Program." While the overall project is being conducted in response to requests by the House Committee on Energy and Commerce and the Senate Committee on Finance, this particular study answers the specific request by the Subcommittee on Health of the Senate Committee on Finance for scientifically based information on the effectiveness of alcoholism treatments.

The goal of this case study is to provide scientific background for congressional consideration of Medicare reimbursement for alcoholism treatment services. In addition to describing the problem posed by the abuse of alcohol, the authors seek to assess, on the basis of scientific research evidence, treatment programs and services developed to aid alcoholics. The primary source of information for this study has been published scientific literature. Because of the limitations of the available literature—i.e., for some treatments, no scientific studies are available, and for some others, the available evidence on outcomes is not sufficient to permit unambiguous conclusions—the study's conclusions are necessarily limited.

*Alcoholism is a medical/psychological term to describe particular syndromes of alcohol use. Alcohol abuse is a more general term used to refer to alcohol use associated with health and social problems.

THE ALCOHOLISM PROBLEM

Alcoholism constitutes a vast syndrome of medical, economic, psychological, and social problems. From 10 million to 15 million Americans are either alcoholic or have serious problems directly related to the abuse of alcohol. Up to 35 million more individuals are estimated to be affected indirectly. Although estimates are imprecise, alcoholism and alcohol abuse have been implicated in half of all automobile accidents, half of all homicides, and one-quarter of all suicides. Alcohol abuse is a major factor in divorce and accounts for perhaps 40 percent of all problems brought to family courts.

The economic cost of alcoholism and alcohol abuse, a major portion of which is lost work productivity, may be as high as $120 billion annually. Furthermore, alcohol abuse may be responsible for up to 15 percent of the Nation's health care costs. Alcoholics use significantly greater amounts of medical services than do nonalcoholics for a wide range of physical problems caused by or associated with excessive drinking.

Alcoholism and alcohol abuse are seen in every socioeconomic group, although the problems may manifest themselves differently across groups. The proportion of people who drink alcoholic beverages has remained relatively constant, and it is estimated that 9 percent of the U.S. adult population drink heavily on a regular basis. A significant portion of heavy drinkers are either physically or psychologically addicted to alcohol, and their use of alcohol results in major problems for themselves and others.

APPROACHES TO ALCOHOLISM TREATMENT

The treatments for alcoholism are diverse, in part because experts have different views about the causes of alcoholism. At least three major views of the etiology of alcoholism can be identified: medical, psychological, and sociocultural. Treatments are generally based on one or a combination of these views.

Modalities of treatment for alcoholism include the use of drugs, psychologically based treatments, and treatments based on group and community efforts. Treatment settings for alcoholics include inpatient facilities, such as alcoholism units within general hospitals, and outpatient facilities, such as community mental health centers or free-standing outpatient clinics. In most treatment settings, a number of treatment modalities are offered. A large number of alcoholics are aided by Alcoholics Anonymous, a self-help organization whose programs can be either part of or an alternative to a formal treatment regimen.

Despite the significance of problems relating to alcoholism and alcohol abuse and the increasing attention of health professionals to these problems, an estimated 85 percent of those with problems due to alcohol use receive no treatment for their condition.

METHODOLOGICAL ISSUES IN EVALUATING THE EFFECTIVENESS OF ALCOHOLISM TREATMENT

Much of the existing literature on the effectiveness of alcoholism treatment is not of very good methodological quality. Scientific research on the effectiveness of alcoholism treatment is difficult to conduct, in part because of the complexity of the alcoholism problem. Ethical and practical problems have hindered the implementation of randomized clinical trials and other controlled research. Furthermore, the assessment of individual treatments is difficult because treatments for alcoholism are often provided in combination. Measuring treatment outcomes is problematic, as well, because there is intense disagreement in the alcoholism field about what the outcome of treatment should or must be—i.e., total abstinence from alcohol or some other outcome such as controlled drinking. The reliability and validity of outcome measures are also at issue.* Finally, the interpretation of the studies that are available is hindered because particular types of patients tend to receive certain treatments and not others.

*Reliability is a measure of the consistency of a method in producing results. A reliable test gives the same results when applied more than once under the same conditions. Validity is a measure of the extent to which a situation that is observed in a study is reflective of the true situation.

RESEARCH ON THE EFFECTIVENESS OF ALCOHOLISM TREATMENT

Despite methodological limitations, the available research evidence indicates that any treatment of alcoholism is better than no treatment. Calculations of average success rates across studies indicate that about two-thirds of those treated improve. Reported success rates depend partially on whether the outcome indicator is abstinence, controlled drinking, or some other index of improvement. **However, there is little definitive evidence that any one treatment or treatment setting is better than any other. Furthermore, controlled studies have typically found few differences in outcome according to intensity or duration of treatment.**

Most treatments for which there is evidence seem to be effective for at least some patients under some conditions. There is some evidence of the effectiveness of group therapy, family therapy, and some kinds of behavior therapy. Studies of mood-altering drugs (e.g., lithium) and sensitizing agents (e.g., disulfiram, more commonly known as Antabuse®) indicate some positive

effects, but the generalizability of the effectiveness of these treatments is limited by methodological problems. Chemical aversion therapy (e.g., with emetine) has been studied intensely recently, and although there are substantial positive findings, the interpretation of these findings is hindered by patient selection problems—i.e., the best rates of abstinence following this therapy seem to be among patients who would be expected to do well. Another problem is that chemical aversion therapy is usually offered as part of a diverse treatment package; thus, it is difficult to attribute the outcome of treatment directly to this therapy.

With respect to treatment setting, there is little evidence for the superiority of either inpatient or outpatient care alone, although some evidence exists for the importance of continuing aftercare as an adjunct to short-term intensive rehabilitation (usually in an inpatient setting). Further research is needed both to specify how to match patient to treatment and setting and to test competing claims of effectiveness.

COSTS AND BENEFITS OF ALCOHOLISM TREATMENT

Cost-benefit analyses (CBAs) are used to develop comparisons of the benefits of treatments against the resources they consume, with both benefits and costs expressed in dollars. An essential qualitative conclusion from available CBAs is that the costs of not providing treatment may be greater than the costs of providing such treatment. Available CBAs of alcoholism treatment services indicate significant reductions in medical care utilization and time lost due to illness, compared to the costs of treatment.

Cost-effectiveness analyses (CEAs) are used to evaluate the relative cost of alternative treatments per unit of effectiveness (typically specified in nonmonetary terms). It is difficult to conduct formal CEAs of alcoholism treatment because of the lack of sufficient data on outcomes of alternative treatments. Nevertheless, available CEAs indicate that hospital-based inpatient care costs significantly more for an equivalent outcome than does outpatient care or care in nonmedical settings.

REIMBURSEMENT ISSUES

A number of private insurance companies, employers, and the Federal Government have recently expanded benefits for alcoholism treatment because it appears that the costs of not providing alcoholism treatment are greater than the costs of providing such treatment. The essential question at this point seems to be not whether reimbursement for the treatment of alcoholism should be provided, but whether current reimbursement policy supports the provision of the most cost-effective treatments.

Although reimbursement formulas are complex, reimbursement systems—particularly Medicare and Medicaid—have generally encouraged the use of inpatient, medically based treatment for alcoholism.* Available evidence, although of widely varying methodological quality, indicates that medically based inpatient rehabilitation services are far more expensive, but not necessarily more effective, than primarily nonmedical inpatient or outpatient treatment.

As of September 1, 1982, the Health Care Financing Administration had developed new Medicare guidelines that tighten criteria for reimbursement for medically based inpatient services, while

*Under the hospital insurance component of Medicare (Part A), alcoholism can be treated as a psychiatric disorder, under the general category of psychiatric health services, in either a psychiatric or general hospital. The supplementary medical insurance component of Medicare (Part B) provides partial coverage for outpatient services.

increasing the availability of reimbursement for outpatient treatment in hospitals and free-standing clinics. There have been no changes in Medicaid regulations, but because of changes in Federal funding policies, States have more latitude in deciding now Federal funds are spent.

Although the new Medicare regulations and other developments in treatment financing may increase the efficiency of the treatment system, their impact is difficult to predict. It would seem reasonable not to further change Medicare eligibility standards until more information is available concerning the effects of these evolutionary changes. **It is clear that there is a need for more systematic specification of which patients would be best served by which of the available alcoholism treatment systems.** Information pertaining to this issue could be developed through available research techniques.

ORGANIZATION OF THE CASE STUDY

This case study is organized into seven chapters. Chapter 2 provides a context for the present policy debate on alcoholism treatment, describes several perspectives on the etiology of alcohol abuse, and identifies various subpopulations with alcohol abuse problems. Chapter 3 describes many of the treatment approaches currently employed and the settings within which alcoholism treatment is delivered.

Chapter 4 assesses various methodological issues involved in evaluating the effectiveness of alcoholism treatment. Chapter 5 provides an analysis of available research evidence. It critically examines major reviews of research on the effectiveness of alcoholism treatment and discusses data regarding treatment outcomes in specific settings with particular modalities. The economic costs of alcoholism and the costs and benefits of providing alcoholism treatment services are detailed in chapter 6. In chapter 7, policy issues of the current reimbursement system are considered in relation to the scientific data regarding treatment.

2.
The Alcoholism Problem

2. The Alcoholism Problem

Alcoholism constitutes a vast syndrome of medical, economic, psychological, and social problems related to the consumption of alcohol (ethanol) (144,216). The social and economic costs to society of alcoholism, particularly to the health care system, are staggering. From 10 million to 15 million Americans have serious problems directly related to the use of alcohol, and up to 35 million more individuals are estimated to be affected indirectly (40). Although estimates are imprecise, alcoholism and alcohol abuse have been implicated in half of all automobile accidents, half of all homicides, and one-quarter of all suicides (85,216).

Alcoholism may be responsible for up to 15 percent of the Nation's health care costs and for significantly lowering the productivity of workers at all strata of the economic system. (A full discussion of the economic costs of alcohol abuse is reserved for ch. 6.) But the primary costs of alcoholism to society are more than economic. Alcoholism and alcohol abuse also adversely affect the health, social relations, psychological well-being, and economic status of a large number of individuals. The extent of these effects is difficult to determine, because an alcoholic may create problems for many others, including family, friends, and coworkers.

OVERVIEW OF ALCOHOLISM

Use of Alcohol

A substantial percentage of the American population uses alcoholic beverages, at least occasionally. The Gallup poll, which began collecting data about alcohol use in 1939, has reported relatively stable patterns in alcohol use over the past few decades. Consistently, about two-thirds of the adult population (66 percent of women and 77 percent of men) report at least occasional use of alcoholic beverages. In recent years, the range in use has been from 60 to 70 percent. Per capita consumption has also remained stable at about 2.6 gallons per year. In the United States, however, about 10 percent of the population accounts for more than half the alcohol consumed; less than half is consumed by a large group of infrequent drinkers and a small group of regular moderate drinkers (168).

Most users of alcohol are not considered alcoholics, "problem drinkers," or even "heavy drinkers." A National Academy of Sciences panel has estimated that among adults, only 9 percent are problem drinkers (in some cases, this includes individuals who drink 1 ounce per day of pure alcohol) (210). Less than half of those considered heavy drinkers—10 percent of those who regularly drink alcohol—would be considered alcoholic.

Effects of Alcoholism

Reliable data on the effects of alcoholism and alcohol abuse are difficult to obtain, in part because of the many individuals affected and the complexity of effects, but also because alcohol use is widespread, and for most individuals, a normal social custom. Moreover, the absence of information about individuals with alcohol-use problems who are not in formal treatment programs makes it difficult both to assess the pervasiveness of the alcohol abuse problem and to document the impact of current alcoholism treatment efforts.

Alcohol (ethanol)—especially when consumed in large quantities or habitually—is related to various health problems such as organ damage (particularly, the liver), brain dysfunction, cardiovascular disease, and mental disorders (85). It has a significant effect on mortality rates; in general, the life expectancy of alcoholics is 10 to 12 years shorter than average (6,198). Cirrhosis of the liver, a direct result of long-term alcohol con-

sumption, is currently the fourth leading fatal disease in the United States (80). When other effects of alcohol abuse are counted, alcoholism is an even more significant mortality factor. In addition, alcoholics have significantly higher suicide rates than do nonalcoholics (up to 58 times greater in some groups of alcoholics) and accident rates that are significantly greater than normal (see 85). Each of these factors results in a significant number of deaths for individuals who abuse alcohol at all age levels (254). In terms of morbidity, it has been estimated that alcoholic patients comprise from 30 to 50 percent of all hospital admissions (120), excluding obstetrics. While these admissions are most often for other disorders, alcoholism complicates the patients' recovery.

Estimated to be a significant factor in up to 40 percent of all problems brought to family courts (85), alcohol use is known to be a major factor in divorce and has been associated with destabilization of families. In addition, automobile, home, and industrial accidents and crimes such as assault, rape, and wife battering have also been associated with alcohol use (85). In recent years, public recognition of the problems involved in alcohol use has increased. For example, only 12 percent of families surveyed in a Gallup poll in 1966 agreed that liquor adversely affected their family lives. In 1981, this figure rose to 22 percent, and a recent Gallup poll indicated that 33 percent of families surveyed indicate that alcohol use has caused serious family problems.

Governmental recognition of the problem resulted in the establishment, just over 10 years ago, of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the requirement of periodic reports to Congress on progress in combating alcoholism (216,223). Health professionals and researchers are becoming more knowledgeable about alcoholism as more data about the problems posed by the effects of alcoholism become known (see, in particular, 144).

Treatment

Despite the range of problems caused by alcoholism and alcohol abuse, an estimated **85 percent of alcoholics and problem drinkers receive no treatment for their condition** (216). In 1977, although approximately 1.6 million alcoholics and problem drinkers received treatment from private and public sources and over 600,000 alcoholics participated in meetings of Alcoholics Anonymous (AA) groups, at least 8 million to 10 million other alcoholics and problem drinkers did not receive any treatment. In considering the effectiveness of current treatments, it should be recognized that the majority of alcoholics and problem drinkers do not receive treatment.

PERSPECTIVES ON ALCOHOLISM

Although alcoholism and alcohol abuse are today acknowledged to be multifaceted medical, psychological, and social problems, they have not always been viewed this way. Alcohol abuse was, historically, either accepted as normal behavior or, in some cases, viewed as a moral problem (see 1) and treated as criminal behavior. In the 1950's, though, both the World Health Organization (WHO) and the American Medical Association gave formal recognition to alcoholism as a medical disease (see 149,150). The most prominent advocator of a medically based concept of alcoholism is a physician, Jellinek (149), whose work has been the basis of most currently used definitions.

Despite increasing emphasis on alcoholism as a medical rather than a criminal or moral problem, experts continue to disagree about what constitutes alcoholism, and there is probably no single best definition (199). Some definitions of alcoholism consider merely the quantity of alcohol consumed or the frequency of drunkenness (51). More recent definitions consider the degree to which serious medical or social dysfunctions result from alcohol use (282) and the degree of psychological

dependence or physical addiction to alcohol (284). Whatever definition is employed, however, it is often difficult to obtain reliable diagnostic data (118). This compounds definitional problems and influences diagnostic decisions and treatment of alcohol abusers.

There are degrees of alcohol use, some of which are associated with problems and some of which are not (49,250). Pattison has identified several developmental patterns of alcohol use and misuse (241). One pattern, that of the "alcohol experimenter," may lead to nondrinking if the experimenter's initial experience is adverse or not pleasurable. Other patterns include "occasional drinking" (drinking only when drinking is socially expected) and "well-controlled drinking" (controlling alcohol use to avoid any adverse consequences, the result of a personal cost-benefit calculation). Higher alcohol use patterns include "habit" drinkers (who drink in larger amounts and may experience physical, psychological, or social effects), and "heavier," though still socially acceptable, drinkers (who are psychologically vulnerable and suffer degradation of function). Alcohol dependence can develop because drinking allays some psychological symptom, provides escape from chronic unhappiness, reflects social and cultural disorganization, or is used to "treat" a physical symptom. Depending on the sociocultural context, different patterns of "use, misuse, and abuse" become the focus of diagnosis and treatment.

Some writers about alcoholism have taken a dimensional approach. Polich and Orvis (249) identified three dimensions: consumption, dependence, and adverse consequences. Marconi (190) identified these three and also included etiology. The key to a dimensional approach is that a drinking problem may be defined in terms of any one or a combination of the dimensions. The precise time at which a drinking problem is serious enough to be called alcoholism has not yet been fully described, despite a range of attempts at reaching consensus, such as that by WHO (348,349), the National Council on Alcoholism (214), and by various empirical attempts (140,147,148,286). The most useful definitions of alcoholism for treatment assessment purposes seem to be those that evaluate the occurrence of significant alcohol-related life problems, including mental, legal, medical, and vocational problems (277).

The most recent *Diagnostic and Statistical Manual* (8) distinguishes between "alcohol abuse" and "alcohol dependence." Diagnostic criteria for "alcohol abuse" include: drinking nonbeverage alcohol; going on binges (remaining intoxicated throughout the day for at least 2 days); occasionally drinking a fifth of spirits (or its equivalent in wine or beer); and having had two or more blackouts, as well as impaired social or occupational functioning due to alcohol. In addition, problems must have existed for a month or more. The diagnostic criteria for alcohol dependence, traditionally referred to as alcoholism, include the criteria for alcohol abuse and two additional criteria: tolerance and withdrawal. Tolerance is defined as "the need for markedly increased amounts of alcohol to achieve the desired effect, or diminished effect with regular use of [the] same amount." Withdrawal includes "morning 'shakes' and malaise relieved by drinking."

The determination of the underlying causes of alcoholism has been even more intensely debated than the definition of alcoholism. At least three major views of the etiology of alcoholism can be identified: 1) medical, 2) psychological, and 3) sociocultural. Each of these perspectives is associated with a particular set of treatment approaches. As described below, however, treatment is often based on several etiological perspectives, and practitioners often accept the view that alcoholism is based on multiple factors.

Medical Perspective

The medical perspective focuses on biological, chemical, and genetic etiological factors. From the medical perspective, alcoholism is considered a disease caused by physiological malfunctioning and requires treatment by a physician. Jellinek (149) posited that alcoholism represents a multifaceted syndrome. In many cases, the alcoholism syndrome follows a particular course of progressive deterioration unless the problem is treated. Jellinek believed that the only effective form of treatment is that whose goal is of total abstinence from alcoholic beverages.

Alcoholism may be conceptualized as the "last stage in a continuum of drinking that extends from social drinking to heavy drinking to problem drinking to alcoholism, where each population [of drinkers] represents a subcategory of the one preceding it" (166). For present purposes, however, the terms alcoholic, alcohol abuser, and problem drinker will often be used interchangeably. This usage reflects the fact that problems associated with alcohol use and abuse may be progressive, but that drinkers may seek treatment at any point in the continuum and for various reasons. The treatment literature does not always distinguish appropriateness of treatments for patients at different points in the continuum.

From Jellinek's perspective, "habitual symptomatic excessive drinking" was distinct from the disease of alcoholism (149,150). Jellinek suggested there were four primary forms of alcoholism:

- *Gamma* alcoholism, said to produce the greatest and most serious kinds of damage, has five characteristics:
  1. acquired increased tissue tolerance,
  2. adaptive cell mechanism,
  3. physical dependence (withdrawal symptoms and craving),
  4. loss of control, and
  5. a definite progression from psychological to physical dependence.
- *Delta* alcoholism shares the first three characteristics of gamma alcoholism, but is characterized by the inability to abstain rather than loss of control; furthermore, delta alcoholism does not include the progression from psychological to physical dependence.
- *Beta* alcoholism is a form of alcoholism in which physical complications occur because of inadequate nutrition, but without either physical or psychological dependence on alcohol.
- *Alpha* alcoholism represents a purely psychological continual dependence or reliance on the effect of alcohol to relieve pain and it does not lead to a loss of control, nor is it considered progressive.

Jellinek maintained that only the gamma and delta forms of alcoholism could be considered diseases.

Use of the disease concept became prevalent and was used to refer to various alcohol-related problems. Jellinek later encouraged the wider use of the disease concept in order to get hospitals and physicians involved so that alcoholics could receive some treatment (49). Through these highly successful efforts, a medically based alcoholism treatment system has evolved that incorporates a range of approaches, including those that are medically, as well as nonmedically, based.

A number of biochemical and physiological mechanisms have been offered to explain the cause of alcoholism. One theory postulates that alcoholism evolves from an inherited metabolic defect that creates a need for certain substances and that alcohol alleviates the symptoms of the deficiency (339,340). A second hypothesis is that alcoholism is the result of an endocrine dysfunction (123,181,293). There is no strong empirical evidence for either of these theories (178,253).

Genetic theories of the etiology of alcoholism have been proposed at a number of points (117, 119,280). Metabolic research with alcoholic populations, however, has been unable to distinguish between effects caused by genetic factors and those produced by chronic ethanol ingestion (273). Nonetheless, evidence suggests that genetic factors may be an important predisposing factor in the onset of alcoholism (166). Support for a genetic view is provided by carefully controlled family, half-sibling, adoptee, and twin studies. These studies have found that among children separated from their biological parents at birth, the presence of alcoholism in the biological parents was a much better predictor of alcoholism in the child than was the presence of alcoholism in an adoptive parent.

In one study of twins conducted in Sweden (161), both twins exhibited alcohol abuse in 54 percent of the pairs of identical (monozygotic) twins but in only 28 percent of the pairs of nonidentical (dizygotic) twins. These studies strongly suggest that a predisposition to alcoholism is inherited, but how the predisposition is transmitted remains unclear. The adoptee and half-sibling study designs cannot separate hereditary fac-

tors from the effects of the intrauterine environment.

Psychological Perspective

The psychological perspective views alcoholism as arising from motivational and emotional dysfunctions in individuals. When dysfunction is preceded by, or occurs in the absence of, problem drinking, alcoholism is considered to be a secondary diagnosis. When there are no major preexisting psychiatric problems, alcoholism is the primary diagnosis (48,277). There are actually several psychological perspectives, representing different theoretical approaches to alcoholism. These perspectives include: 1) behavioral, 2) psychodynamic, and 3) systems approaches.

Behavioral Approaches

Behavior theorists view alcoholism as a learned response. In their view, the drinking of alcohol becomes "reinforcing;" i.e., the drinking of alcohol is associated with positive, rewarding experiences. Positive reinforcers for alcohol use include tension reduction, release of inhibitions, and facilitation of social interaction. Learning particular alcohol responses can occur through classical conditioning (Pavlovian), operant conditioning (Skinnerian), or modeling processes (192). Each of these conditioning processes indicates a separate mechanism through which alcoholism develops.

A version of the behavioral approach is based on cognitive behavior theory (191) which posits that reinforcement lies "in the eye of the beholder." Cognitive behaviorists hypothesize, for example, that alcoholics drink in an attempt to decrease their levels of stress, referred to as "tension reduction" (56,65), despite the fact that physiological evidence indicates that alcohol actually increases tension (277). For example, Higgins and Marlatt found that male subjects in a laboratory experiment who expected to be evaluated drank significantly more alcohol than did low-fear control subjects (134). Berglas and Jones found that males, but not females, who were uncertain about success on a task chose a performance-inhibiting drug (designed to mimic alcohol ingestion), presumably to reduce tension about performance (27,155).

Psychodynamic Approaches

From the traditional psychoanalytic perspective, alcoholism is seen as a symptom of underlying pathology resulting from unconscious conflicts. These conflicts are assumed to be the result of early childhood experiences and an outgrowth of interactions and fantasies about relationships within the nuclear family. According to this application of psychoanalytic theory, once the conflict is recognized and the patient is helped to gain insight into the problem, dysfunctional drinking behavior will stop naturally (170,329).

Several longitudinal studies have found an association between adult drinking and early pathological family experience (159,180,193,265). Lack of control, aggressiveness, impulsivity, and disruptive family experiences (such as loss of a parent) are seen as precursors to various types of psychopathology, including alcoholism. The immature level of development that characterizes alcoholics is another emphasis of psychodynamic approaches (22,287). Many studies have failed to find specific personality traits that, prior to evidence of an alcohol problem, differentiate alcoholics from others (14,270,311). There is some evidence, however, to suggest that alcoholics, once drinking, show similar personality traits, including low stress tolerance (179), dependency, impulsivity (50), and feelings of isolation, insecurity, and depression as well as poor self-image (146, 333,346).

Psychoanalytic theory, while historically very important and influential, is no longer theoretically dominant (227). More important today is the psychodynamic position that builds on some of the basic assumptions of original psychoanalytic theory, but has modified and adapted its components. From this perspective, all behavior, including alcoholism, is seen as being heavily shaped by early experiences, but maintained by current events.

Systems Approaches

The belief that alcoholism is sustained by a pathological environment underlies the systems theory approach to alcoholism. In this view, alcoholic behavior in an individual is seen as only the tip of an iceberg, the iceberg being a continuing

and immediate pathological interpersonal system (20,97). This system is usually the family (39), but it can also be significant other interpersonal networks in which the alcoholic participates (331). Although the systems approach is considered here a psychological perspective, in that the source of the problem is seen as the individual, the systems view shares much in common with the sociocultural perspective on alcoholism.

Sociocultural Perspective

From the sociocultural perspective, alcohol abuse is seen as the product of living in a particular social and cultural milieu (19,51,141). Drinking behaviors may be regarded as learned, but the sociocultural interpretation (unlike the behavioral theory interpretation) is that these behaviors are the result of a lifelong socialization and acculturation process. Ethnicity, age, socioeconomic class, religion, and gender are seen as important factors that shape an individual's behavior. Children are socialized in the culturally prescribed beliefs, attitudes, and behaviors toward alcohol. The variance in the occurrence of alcoholism among different groups is cited as evidence to support this theory. Consistent reports of high rates of alcoholism among the Irish, American Indians, and Swedes, compared to lower rates among Jews, Mormons, and Chinese are frequently cited (59).

Zinberg and Fraser (351) have posited five sociocultural standards or cultural variables associated with the ability to control drinking behavior: 1) cultural differentiation of group drinking from drunkenness and the association of group drinking with ritualistic or religious celebrations; 2) cultural association of drinking with food and ritualistic feasting; 3) nonsegregation of males from females in drinking situations; 4) disassociation of drinking from individual efforts to escape personal anxiety and disassociation of alcohol from medicinal value; and 5) absolute cultural disapproval of inappropriate behavior when drinking, including the disassociation of drinking from a male or female "rite of passage." In the United States, Zinberg and Fraser suggest, all the cultural standards except those relating to drinking to alleviate anxiety have reappeared. It is possible that the general cultural emphasis on controlled drinking may account for accelerated attempts to cure and prevent alcoholism and alcohol abuse.

Integration of Perspectives

Each of the approaches to the etiology of alcoholism has received some empirical support, and it is probably most reasonable to view alcoholism as having multiple causes and a complex course of development. Multivariant models of alcoholism have recently been proposed by a number of alcoholism experts (e.g., 166,245). As already noted, Pattison and colleagues contend that alcohol dependence subsumes various syndromes defined by drinking patterns and the adverse consequences of such drinking (245). An individual's use of alcohol can be considered a point on a continuum from nonuse, through nonproblem drinking, to various degrees of deleterious drinking. The development of alcohol problems follows variable patterns over time, and, according to Pattison, abstinence bears no necessary relation to rehabilitation. Psychological dependence and physical dependence on alcohol are separate and sometimes unrelated phenomena, but continued drinking of large amounts of alcohol over an extended period of time is likely to initiate a process of physical dependence. Alcohol problems are typically interrelated with other life problems, especially when alcohol dependence is long established.

POPULATIONS: INCIDENCE AND TREATMENT

Although alcoholism is widespread among various demographic and social groups, problems with alcoholism may have different bases across groups and may manifest themselves differently. Solomon articulates the need to develop alcoholism treatments tailored to the diverse needs of subpopulations (306). Like Pattison, Solomon argues that demographic characteristics such as gender, race, ethnicity, social class, and age, as well as the life situations of alcoholics, critically influence

both treatment selection and treatment effectiveness (240,241).

Having a job, a stable income, and a reliable set of social and personal supports correlate positively with treatment outcomes (16). Men and women from lower socioeconomic classes—those most dependent on public resources, such as Medicaid and Medicare, for health services—appear to suffer more extensive drinking problems and respond less well to traditional treatment services than do middle- and upper-class adults. Being working class or poor in the United States often involves unstable employment prospects and related disruptions of stable family relationships (163,307,321). Such multiplicity of problems undermines simple or inexpensive interventions designed to reduce alcohol problems (217).

It has been consistently documented that men across all social classes receive more alcoholism services than do women. Armor and colleagues' analysis of data from the NIAAA indicated that male alcoholics in treatment tended to be unemployed, unmarried, southern, of lower socioeconomic status, and Protestant (13). Current NIAAA data (218) are not reported by region or religion. As shown in table 1, the population served by NIAAA is predominantly male (81.1 percent) and middle-aged (mean age 36). Over one-third served are racial/ethnic minorities (17.4 percent, black; 5.9 percent, Indian; 10.5 percent, Hispanic (44). Furthermore, one-third served are veterans. Only one-quarter are married—34.5 percent have never married, another 33 percent are either separated or divorced, and 3.7 percent are widowed. The mean educational level is below high school senior. In addition, 84 percent of those treated are potentially in the labor force, but half of those are unemployed. Those in alcoholism treatment programs for public inebriates, blacks, and migrant workers are the most disadvantaged economically (an average of almost 75 percent are unemployed).

Table 1.—Comparison of Alcoholics in NIAAA-Funded Treatment Programs With the General Population

Characteristic	Alcoholics in NIAAA-funded treatment programs with characteristic	Characteristic	General population with characteristic
Age:			
18 and under	5.2%	Under 18[a]	28.1%
19-35	49.4	18-34	20.7
36-64	43.3	35-64	30.9
Over 64	2.0	Over 64	11.3
Mean age	36 years	Median age	30 years
Gender:			
Female	18.9%	Female	51.4%
Male	81.1	Male	48.6
Race/ethnicity:			
Black	17.4%	Black	11.7%
American Indian and Alaskan Native	5.9	American Indian and Alaskan Native	0.6
Hispanic	10.5	Hispanic	6.4[b]
White and other minorities	65.4	White and other minorities	87.7
Marital status:			
Married	25.0%	Married	65.7%
Single	34.5[c]	Single	20.1
Separated or divorced	33.0	Separated or divorced	6.2[d]
Widowed	3.7	Widowed	8.0
Education:			
Mean school years completed	10.8 years	Median school years completed	12.5 years

[a]NIAAA reporting categories and Census reporting categories are not equivalent.
[b]Persons of Spanish origin may be of any race; therefore, figures shown do not add to 100 percent.
[c]NIAAA category is "never married."
[d]Census category is "divorced."

SOURCES: National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services, *National Drug and Alcoholism Treatment Utilization Survey* (Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, June 1981); and Bureau of the Census, Department of Commerce, *1980 Census of Population; 1980 Supplementary Reports*, Document No. PC 80-51-3 (Washington, D.C.: Department of Commerce, 1980).

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Not much has been written about the reasons for the apparent different rates of prevalence among different subpopulations. Armor and colleagues (13), in trying to explain the tendency of low socioeconomic Southern Protestant males to present themselves for alcoholism treatment programs, invoked cultural values as an explanation.

Elderly People

Many surveys indicate an overall decline in alcohol use with age (cf. 12), indicating, perhaps, less need for treatment services among elderly populations. Among elderly people who drink, however, a significant number have alcohol problems (223). In 1978, 6½ percent of those served in NIAAA-funded alcohol treatment centers were age 60 and over (218). Schuckit and Miller (281) report that, in recent years, approximately 10 percent of alcoholics in treatment are age 60 or older. Two percent of elderly women are problem drinkers (13). For the late-onset alcoholics (those whose alcohol-related problems began after age 40), health and marital problems appear to be closely associated factors. Stressful life situations such as loss of a spouse, lack of purposeful employment, and poverty, which are often connected with advanced age, contribute to alcohol use and abuse.

Despite the significant number of elderly people who receive treatment, many do not receive treatment for alcoholism. NIAAA hypothesized that for the elderly, reluctance of friends, relatives, and professionals to recognize drinking problems; incorrect diagnosis; inability of social agencies dealing with aging to treat alcoholism; and the orientation of treatment centers to younger clientele constitute barriers to treatment (216).

Youth and Adolescents

Surveys of alcohol use (e.g., 127) have indicated that a substantial proportion of youths drink excessively. In 1978, youths 18 and under comprised 4.5 percent, and individuals between the ages of 19 and 24 comprised 14 percent, of those served by NIAAA-funded alcoholism treatment projects (100). Donovan and Jessor (82) report that approximately 5 percent of both girls and boys in the seventh grade are problem drinkers; the proportion of problem drinkers increases steadily in each grade, until by grade 12 almost 40 percent of males and 20.6 percent of females are problem drinkers. NIAAA reports that a national survey of men aged 21 to 59 showed that the highest proportion of drinking problems are in the group aged 21 to 24.

Donovan and Jessor (82) define problem drinking for youth and adolescents as having been drunk five or more times and/or having two or more life areas in which negative consequences occurred in the past year. Although this is a liberal standard, compared to those used to identify alcoholics, it highlights the seriousness of adolescent alcohol use. Probably the most alarming consequence of adolescent and young adult drinking is its relationship to fatal driving accidents (352,353). Recently, the Secretary of Transportation called for a uniform requirement that the minimum age for those purchasing alcoholic beverages be 21 years.

The most reliable predictor of drinking among youths is the drinking behavior of their parents (257), although peers have an important influence (41,151,152). In 81 percent of families in which both parents drink, children also drink; in 72 percent of families with two abstaining parents, children do not drink (216). A number of sociocultural influences predisposes young people toward drinking. These include residence in an urban area, divorced or separated parents, a poor parent-child relationship, and high socioeconomic status (34).

According to a recent review, systematic, theory-based research on the cause of adolescent problem drinking and the circumstances under which it "matures out" is minimal (216). Much as other special populations do, youths who abuse alcohol appear to have special treatment needs. According to some experts, it needs to be recognized that because adolescent problem drinking is only part of the total syndrome of problem behaviors, alcohol-specific treatment is inadequate (216).

Women

Women comprise only 20 to 40 percent of those served in alcohol treatment facilities, but the question of whether women are less prone to alcohol-

ism or are an underserved population has not yet been answered (306).

There is evidence that women tolerate alcohol less well than men (38). They reach a higher blood-alcohol level faster and are more at risk for the development of biomedical consequences. About 16 percent of women alcoholics develop liver disease compared to 8 percent of men, and women appear to be at a higher risk of death from alcoholism than are their male counterparts. Although alcoholism typically has a later onset in women than in men, there is evidence of "telescoping" in women, whereby medical problems develop faster than in men.

One explanation for their relatively low rate of treatment is that women may be less "visible" in their need for services (e.g., the homemaker who drinks during the day), and family members and coworkers may be more reluctant to intervene with women drinkers (216). Furthermore, epidemiological surveys may be insensitive to characteristics of female alcoholics, in part because alcoholism is more of a stigma for women than for men (24). It is also possible that because women are more likely to be multiple drug abusers, their alcohol addiction is camouflaged.

The proportion of women who drink has risen from one-third prior to World War II to two-thirds at the present time (116). As to which women are more likely to become alcoholics, efforts to delineate a female alcoholic syndrome have been disappointing (cf. 153). Although there are no reliable indicators of which women will become alcoholic, a review by Bourne and Light (38) indicates that black women, women with alcoholic parents (especially an alcoholic father), and women who have a number of gynecological problems are particularly at risk. Johnson's recent analysis of social factors indicates that unemployed divorced women are at greatest risk of becoming alcoholic, although employed married women showed significantly higher rates of consumption and number of problems than did single, employed women or nonworking married women (153).

It is believed that additional attention must be paid to the needs of women alcoholics (36). This attention seems warranted, both because of increased recognition of the problem of women drinkers and, also, because women are childbearers primarily responsible for child care (cf. 116). The fetal alcohol syndrome, which encompasses a broad range of brain dysfunctions, growth deficiencies, and malformations among children born of alcoholic mothers, is believed to represent a significant health risk (85,157).

Blacks

Although blacks are overrepresented in the population seeking alcoholism treatment in NIAAA-funded programs, there is evidence that the vast majority of black alcoholics either do not receive any treatment at all or receive treatment less often than members of other groups. It has been hypothesized that blacks may not seek treatment because of pressures in the black community to deny that alcoholism is a problem. If it is acknowledged as a problem, there are pressures to treat it as a moral issue rather than a medical one (38). It may also be, as one study found, that black alcoholics are referred for treatment less often despite greater prevalence because higher levels of drinking are assumed to be normal (323).

Current social conditions, such as the high rate of unemployment among blacks and the low level of jobs among those who are employed, are believed to be important factors leading to the high incidence of alcoholism (38). In support of this view, Kane's analysis of black and Hispanic innercity alcoholics found that the most frequently given reason for drinking was "escape" (162). In-depth studies of such psychological factors are few. Fine and Steers found a strong correlation between alcoholism and depression, a finding of special significance because of the high incidence of depression in black males (101). One longitudinal study of 240 black males found that certain family patterns were associated with later alcoholism: broken homes, irresponsible parents, and parents with drinking problems.

The Third Special Report to the U.S. Congress on Alcohol and Health (223) argued that more research on blacks and alcoholism is imperative. Potential causative factors have been identified, but evidence is associative and impressionistic. Because "the characteristics that distinguish special

population groups from the dominant culture and from each other are also frequently involved in the development of alcohol use and abuse among those groups," the report argues for research that could lead to the development of culture-specific treatment programs.

Hispanics

Despite the research showing that problem drinking is relatively widespread among the Spanish-speaking population, both here and in their native countries (187), systematic data on alcohol use and abuse among Hispanics are sparse (162, 223). Interpretation of existing data is complicated further by the number of different ethnic groups included as Hispanic and by the heterogeneity of subgroups. Most research on problem drinking among Hispanics has focused on Mexican Americans, with less research attention being given to the alcohol problems of Puerto Rican, Cuban, Central American, and South American Hispanics (223).

Problem drinking among Hispanics has been hypothesized to be a result of acculturation stress (188), the Latin idea of "machismo" (2), cultural acceptance (162), and economic deprivation (313). Machismo, in particular, contributes to denial of the alcohol problem and, thus, creates a barrier to seeking treatment (3,223). This also affects alcoholic Hispanic women, whose husbands restrict their access to such treatment. Many researchers and service providers emphasize the importance of providing culturally specialized treatment programs staffed by those who can speak Spanish and who share a cultural background with their clients (125). Others disagree, believing that treatment should stress the nature of the problem rather than cultural considerations (223).

American Indians

The prevalence of American Indians in NIAAA-funded alcoholism treatment programs is more than 10 times what would be expected on the basis of census figures. A high incidence of alcohol-related problems among Indians has been documented, including arrests for public drunkenness and crimes associated with alcohol; high death rates from cirrhosis of the liver; accidents, suicide, and homicide; and fetal alcohol syndrome (215). These findings may be a function of the attention given by the Federal Government to the American Indian population and special programs established to aid the Indians. The absence of definitive studies precludes accurate estimation of the prevalence of alcohol-related problems in American Indians. Some evidence, collected by Leland (175,176), suggests that most Indians "drink responsibly or do not drink at all" (223). Cultural explanations are contradictory, but an understanding of Indian cultures has been deemed imperative for understanding the problem (174,177).

Other Special Groups

Problem drunk drivers, public inebriates, and skid-row alcoholics are other populations that may have special characteristics and treatment needs for their alcohol problems. Drunk driving, in particular, has become one of the most serious national problems. Individuals arrested for driving while intoxicated (DWI) form a substantial alcohol abuser population. In 1980, 29 percent of all admissions to NIAAA-funded treatment programs were DWI-related (217). More punitive laws are currently being implemented in many States as a consequence of public concern about drunk driving. Various types of compulsory treatment for this group of users have been tried in many States for years, although their success is questionable.

Public inebriates and skid-row alcoholics form another special population. NIAAA's 1981 report (216) distinguishes between public inebriates, who are socioeconomically heterogeneous, likely to be working, and have a place to live, and the stereotypical, homeless, and destitute skid-row alcoholics. The latter population is more likely to require specialized treatment programs, because the individuals comprising it tend to do poorly in any kind of treatment that is effective with socially and economically stable individuals.

Individual Difference Factors

In addition to varying with respect to sociodemographic factors, alcoholics vary in patterns of drinking, treatment, and severity of psycho-

logical and medical history symptoms. Although there are few reliable indicators of the factors that lead clients into treatment, psychological factors of dependency/passivity, intellectual and emotional functioning, self-esteem, hostility, and motivation have been found to relate to successful outcomes in a variety of studies. These factors are of weaker predictive ability than are demographic factors. Somewhat paradoxically, good indicators of treatment success include having had one's first intoxication and first alcohol-related problems at a later age, having had a longer history of heavy drinking, and having had a history of AA contact prior to treatment. While a longer history of heavy drinking is a good predictor, severe symptoms at intake are not. Symptoms of a periodic rather than a daily drinking pattern, abstinence prior to treatment, and absence of delirium tremens, are particularly predictive of good outcomes (306). These drinking behavior variables may be more predictive of successful outcomes than are social and psychological factors.

A recent analysis by Solomon (304) found that patients' exposure to outpatient therapy was greater for socially stable patients and the less alcoholically impaired. The characteristics that appear to be associated with better treatment outcomes are older age, Caucasian race, social stability (in particular, a stable marriage), steady employment, higher education and income levels, and fewer arrests. What seems clear is that particular populations may have different prognoses and treatment needs.

CONCLUSIONS

The present review of the etiology of alcoholism and the effects of alcoholism on various subgroups illustrates the complexity of alcoholism as a social and health care problem. Alcoholism and alcohol abuse have multiple origins and affect diverse groups of individuals. That the phenomenon is complex, however, should not deter efforts to understand the problem and develop treatment solutions. The problems of alcoholism and alcohol abuse are too serious, in terms of their impact on the Nation, for the problem to be ignored.

3.
Approaches to Alcoholism Treatment

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Given the diversity of etiological understandings of alcoholism and the populations affected, it is not surprising that there are diverse treatments. Described below are the treatment modalities, settings, and providers that comprise the present health care system for alcoholism. It is important to recognize that each of the system components to be described affects the others, that specific modes of treatment can be offered in multiple settings, and that treatment providers often use several modalities and settings as part of a treatment program.

TREATMENT MODALITIES

The major treatments for alcoholism can be organized into three major approaches, which parallel etiological perspectives: 1) medical, 2) psychological, and 3) sociocultural. In practice, treatments often overlap, with psychologically oriented treatments using medications as adjuncts and drug treatments being combined with psychological techniques. In fact, the approach used with alcoholics in most treatment settings is eclectic and multivariant, with several approaches being utilized at the same time.

Medical Approaches

The difficulty of delineating the basis of alcoholism treatments is clear in any attempt to identify medical approaches. Three types of medical treatment are described here, one having to do with detoxification and the others with the use of drugs. Additional treatments that could have been included because they are often delivered by physicians, such as chemical aversion therapy and psychotherapy, are discussed as psychological approaches. The classification is less important than the nature of the treatment.

Detoxification

In the context of the present report, detoxification is not an actual alcoholism treatment, because it is not designed to treat the underlying dependence on alcohol. However, medical intervention may be necessary to manage withdrawal from alcohol and may be necessary as the first step in a treatment program. Chronic alcohol intake results in cellular alterations to which the body adapts, and withdrawal reactions may include heightened sensitivity to sensory stimuli, hyperactivity of reflexes, muscular tension and tremor, over-alertness, anxiety, insomnia, and reduced seizure threshold. The withdrawal reaction, itself causes additional physical stress, and problems may be further complicated when withdrawal results from the need to recover from surgery or serious injury. The severity of symptoms depends on the intensity and duration of the patients' drinking problem (285).

A recommendation of hospitalization for detoxification is made for patients with severe withdrawal symptoms, medical or surgical complications, or other evidence of moderate to severe withdrawal such as a history of seizures during past withdrawals (285). Detoxification can also be handled on an outpatient basis or in a nonmedical setting (a detoxification center), although medical backup is required in the event of emergencies. Increasingly, efforts are being made to detoxify patients without hospitalization, although that is safe only if the patient has no complications and has available supervision.

Support services are often an important part of the treatment for withdrawal (207). The use of supportive services without pharmacological treatment (e.g., reassurance, reality orientation, and frequent monitoring of signs and symptoms) is known as social detoxification and has been found to be safe and effective for patients who are not experiencing severe reactions (142,314, 334).

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Antianxiety medications are often prescribed during the detoxification process for managing symptoms such as disorientation, seizures, visual and auditory hallucinations, and delirium tremens. The usual drugs of choice for managing alcohol withdrawal are the benzodiazepine derivatives: chlordiazepoxide (Librium®), diazepam (Valium®), clorazepate (Tranxene®), and oxazepam (Serax®). Some physicians continue prescribing these tranquilizers after the detoxification period, but such use can sometimes lead to psychological dependence on the drugs and other side effects that inhibit recovery (108). The dosage and the length of use of antianxiety medications vary widely. Some experts see the drugs in later stages as a symbolic vehicle in clinician/patient interaction, where the act of giving and receiving is seen as more important than the actual pharmacologic action (232,271).

Mood-Altering Drugs

Antidepressant medications have a long history of use in the treatment of alcoholics. The logic of their use seems persuasive, since alcoholism and depression are often inseparable (114,186,304, 305). Most commonly prescribed are the tricyclic antidepressants and lithium. However, the side effects associated with these drugs and the deleterious and, at times, fatal effects of ingesting these drugs along with alcohol make their use questionable (165,199). Furthermore, these medications treat the affective disorder associated with alcohol abuse, but not alcoholism itself.

Some physicians (generally, psychiatrists) prescribe major tranquilizers or antipsychotic medications for alcoholics who are severely agitated. Some prescribe these drugs only for people who are both alcoholic and psychotic. Alcohol has been considered a form of self-medication that has been used by schizophrenics to calm themselves. When these individuals stop drinking, they may become severely agitated (199). Many physicians are hesitant to prescribe these medications at all (165). The fact that many patients do not take their medications as prescribed is another negative factor (262,336).

Sensitizing Agents

Disulfiram (Antabuse®) is the most commonly used drug in alcoholism treatment. Antabuse® does not cure alcohol craving or dependence per se, but causes psychological effects such as respiratory difficulty, nausea, vomiting, and sweating when alcohol is ingested while the drug is active. The intensity of reactions depends both on drug dosage and amount of alcohol subsequently ingested—with large doses of Antabuse® and alcohol combined, reactions may be fatal. After taking Antabuse®, the patient's desire to drink will be dulled by the thought of inevitably getting sick (165). One disadvantage is that a person can stop the Antabuse® regimen at any point and shortly thereafter (within 24 to 48 hours) be able to drink with impunity. For patients who are motivated to abstain, however, life is simplified by Antabuse®, as there is only one decision a day—either to take the pill or not to take the pill. For this reason, Antabuse®-based treatment has been described as a method of "ego-reinforcement" (30).

Antabuse® is not recommended universally for alcoholics for several reasons. It cannot be given to patients with other serious medical disorders (165). For example, the use of Antabuse® with elderly alcoholics is often contraindicated because of the risk of cardiovascular problems (23). Furthermore, Antabuse® has been associated with suicide among users (303).

Psychological Treatments

The forms of psychological treatment vary widely and, as with medical treatment, are difficult to classify. Behavioral approaches, although based on only one of several important themes used to explain alcoholism, have been widely employed in recent years to treat alcoholics. Other psychological therapies (including nonbehavioral and the related systems approaches), while extensively employed generally, have been used less frequently to treat alcoholism specifically.

Behavioral Approaches

A large number of behavioral techniques to treat alcoholics have been developed over the last

30 years (cf. 208). Based on research that investigates how individuals learn and maintain habits, behavioral approaches are supported by an extensive basic research literature and substantial evidence of their effectiveness in treating other disorders (cf. 227). Often, behavioral treatments are used in conjunction with other psychological treatments as part of broad-spectrum treatment packages (15,172,301).

One type of behavioral technique used with alcoholics is referred to as blood-alcohol level discrimination training. Based on the assumption that alcoholics do not accurately process information about their level of intoxication, the procedure teaches alcoholics how to estimate correctly their blood-alcohol level (182). A related technique involves confronting alcoholics with videotapes of themselves when drunk so they can experience their drunken behavior as observers do. In both cases, it is assumed that alcoholics can be taught to manage their alcohol intake.

A second group of behavioral techniques is used to train alcoholics to relax. These techniques are based on a tension-reduction hypothesis and an assumption that alcohol is ingested to reduce stress. Training alcoholics to relax, by teaching them, with biofeedback, how to alternately tense and relax their various muscle groups is believed to help them develop nonharmful, substitute behavior (171). Techniques of visualization and imagery are also used in relaxation and desensitization training (345).

One assumption behaviorists make about alcoholics is that they have difficulty expressing their wants, needs, and frustrations. Various assertiveness training approaches are used to develop their skills in self-expression. Role-playing and behavioral rehearsing of problem situations are also used. For example, an alcoholic practices saying "no" when offered a drink or role plays walking away from the kind of domestic scene that usually precipitates a drinking binge (21,298).

Cognitively oriented behaviorists assume that if alcoholics understand the idiosyncratic thoughts, feelings, and behaviors that precede their own drinking, they can substitute alternative behavior for drinking. Thus, analyses of patterns of drinking and counseling about alternative behaviors may also be part of the behaviorists' repertoire. Sobell and Sobell used such an approach as part of their Individualized Behavior Therapy for Alcoholics (296,300,301).

Chemical aversion therapy is perhaps the best known treatment associated with behavioral theory. Its goal is to facilitate abstinence by developing a conditioned aversion to the taste, sight, and smell of alcoholic beverages. This aversion is accomplished by injecting an alcoholic patient with an emetic substance such as emetine hydrochloride just before serving him or her an alcoholic drink. Nausea results in about 2 to 8 minutes. Often, additional drinks are given over a 30-minute period as the nausea continues, and the sequence of pairing nausea with alcohol is continued. In some inpatient settings, treatment may involve five such injections given every other day over a 10-day period (335). By the end of the series, the alcoholic is expected to have developed a negative association to the sight and smell of alcohol. The treatment is based on Pavlovian classical conditioning principles, and according to the theory, a person who receives such treatment will develop a long-term aversion to alcohol. In many cases, reconditioning sessions are offered to maintain the aversion.

The advantage of chemical aversion therapy is that it offers the potential of training alcoholics to abstain. There are disadvantages, as well. Because nausea is repeatedly induced, the technique is potentially hazardous and must be administered under medical supervision (16). Chemical aversion therapy is typically provided in a hospital setting, and with the need for multiple sessions, it is a costly form of treatment.

A type of cognitive aversion conditioning without the dangers of chemical aversion therapy is covert sensitization (57). Patients treated with covert sensitization are instructed to imagine that they are about to drink some alcoholic beverage, experience a sensation of nausea, and vomit. In this way, the target stimulus (alcohol) becomes associated with an aversive stimulus (vomiting). Feeling better becomes associated with leaving the scene where the urge to drink occurred (escape conditioning). The technique is called covert, because the stimuli are not present at conditioning

sessions. The word sensitization implies a gradual buildup of an avoidance response. Covert sensitization is often preceded by relaxation, desensitization, and assertiveness training to treat the anxiety component of the drinking behavior. Depression is thereby avoided because the patient is provided with a means of coping with his or her environment when sober.

Nonbehavioral Psychotherapies

Various nonbehavioral psychotherapies are also employed with alcoholics. Nonbehavioral psychotherapy can be delivered on a one-to-one basis, in families, or in groups. The length of individual therapy varies, ranging from short term, of 12 or fewer sessions, to long term, from 2 to 7 years. The kinds of approaches vary widely although the approaches all have the goal of aiding the alcoholic (or family members) to understand and deal with physical or psychological dependence on alcohol (227). Several forms of psychotherapy can be employed, and speciality therapies such as transactional analysis (115) and reality therapy (308) are also used.

Although there is some limited use of psychoanalytic therapy, most psychotherapists who treat alcoholics emphasize treating the contemporary life problems of patients. They feel that alcoholism, while perhaps rooted in early experiences, is maintained by present interactions. Therefore, they focus their therapeutic attention on what produces stress on the job, in family interactions, and on the role alcohol plays in the patient's life. They may discuss feelings, offer support, and facilitate problem-solving. In addition, they may use some of the behavioral techniques discussed above in the belief that behavior change as well as insight is important. In all kinds of psychotherapy, the relationship between therapist and client is itself a key factor in encouraging change (cf. 104).

Group therapy has received a good deal of attention recently as the treatment of choice for alcohol problems (cf. 26,83). Group therapy sessions are usually held once or twice a week on an outpatient basis or, more frequently, in inpatient settings. Therapists focus on the process of the group as a whole, but may also work individually with patients. The group members support and challenge one another. The feedback from the group is supposed to be a powerful catalytic agent in helping the alcoholic change.

It is generally assumed that nonbehavioral psychotherapies are effective because they deal with the underlying problems of an alcoholic, rather than the symptoms. Nonetheless, all psychotherapies have been criticized as being difficult to use with alcoholics. Psychotherapy is especially difficult to employ if attempted while a patient is still drinking (60). A number of experts are pessimistic about the efficacy of psychotherapy for those who cannot maintain abstinence or reduced drinking during treatment (35,129,135). Other reviewers have argued that this negative impression is not well founded and that psychotherapy is necessary to deal with the underlying psychological causes of alcohol abuse, especially for heavy, habitual drinkers (18,95,199).

Systems Approaches

As noted previously, most systems approaches focus on family interactions, and in particular, on family communication patterns. It is assumed that the family has developed ways of interacting that accommodate, if not perpetuate, the alcoholic's drinking. If the negative family interactions are not treated, when the alcoholic stops drinking, the family may subtly exert tremendous pressure on him or her to resume drinking.

Family therapy is related to group therapy. In practice, family therapy can involve various psychotherapeutic techniques. In general, the goal of such therapies is more direct expression of wishes, needs, and feelings by family members. Families are taught how to talk more openly about their own family interactions and to become observers of their interactions. It is assumed that such discussions and the development of communication skills will aid the alcoholic member by reducing environmental stresses and providing support to control drinking urges.

Sociocultural Approaches

The essence of sociocultural approaches is the assumption that the successful treatment of alcoholics requires changing the social environment

within which such individuals function. Such approaches share the rationale of group and family psychotherapies about the need to change the alcoholic's environment. In practice, this often means removing the alcoholic individual temporarily from his or her home and placing that individual in a new setting, such as an alcohol treatment facility. Changing the environment may also mean creating a whole new culture for the alcoholic, such as that which Alcoholics Anonymous (AA) provides (351).

AA is a volunteer self-help organization, which, although not a formal treatment provider, is perhaps the major resource for alcoholics in this country and elsewhere (5,173). It provides a new ideology for members by supporting abstinence from alcohol (351), a sense of belonging, and an involving set of activities. Founded in 1935 by two alcoholics (one of whom was a physician), AA takes an approach that directly confronts the denial typical of alcoholics. At AA meetings, each speaker announces, "I am an alcoholic." In addition, AA incorporates a spiritual approach; as part of the "twelve steps" of recovery, all members submit to a "higher power." Although the organization has religious origins (the second founder was a religionist), belief in God is not essential, and many agnostics belong. At meetings, members share personal narratives about the difficulties caused by alcoholism and the positive experiences of sobriety. Members typically attend at least one meeting a week; some attend daily. Help for AA members is available 24 hours a day, with fellow members willingly visiting the home of anyone needing assistance. For those who join AA, the group provides a network of abstainers to replace the individual's old social system (128,156).

AA can also help change the family environment through parallel programs such as Al-Anon (for spouses of alcoholics), and Alateen (for the children of alcoholics). Using similar group support techniques, these related groups help family members cope with the problems created by the alcoholic family member and provide a supportive environment for sobriety. Although AA has often been regarded as the most effective form of help for an alcoholic (103,109) it has also been subject to criticism (173).

Combination of Treatment Modalities

Although a variety of treatment modalities have been described, it is important to note that alcoholics and alcohol abusers are rarely, if ever, treated with only one method. Thus, for example, hospitals that employ aversion conditioning may also use individual and group counseling and participation in AA as part of the treatment regimen. Psychodynamically oriented therapists may also use desensitization techniques and prescribe Antabuse® or a mood-altering drug to encourage the alcoholic to remain in treatment. Treatment providers may refer indigent alcoholics to vocational training or those with severe psychopathology for psychiatric care. The important point is that, in practice, no single treatment is considered sufficient for treatment of alcoholism.

TREATMENT SETTINGS AND PROVIDERS

A major focus of research on treatment effectiveness is often on the setting within which treatment is provided. Recently, research has begun to assess characteristics of settings in an attempt to discover effective treatment programs and appropriate patient-setting matches (cf. 24,42,72,73). Differentiating between various settings, however, is often difficult. Below, the most common treatment settings for alcoholism and the providers who deliver alcoholism services are described (also, see table 2).

Inpatient Care

The distinguishing characteristic of inpatient care is overnight stay in a medical facility.* Inpatient settings include: 1) alcoholism detoxifica-

*This distinction follows the typology of Armor (13) and others. However, the National Institute on Alcohol Abuse and Alcoholism analyses characterize as inpatient any form of residential care (halfway and quarterway houses, small group homes, boarding houses, as well as hospitals) (cf. 218).

Table 2.—Characteristics of Treatment Settings

Setting	Treatment modalities	Patients[a]
Inpatient		
General hospitals Short-term detoxification units Rehabilitation stay (3 to 4 weeks)	Medical: frequently pharmacotherapy	Socially stable, fewer years of heavy drinking
State and private psychiatric hospitals	Individual and group psychotherapy, alcoholism education, AA, Antabuse®	Lower middle class, relatively socially and vocationally disabled Severe psychiatric condition or opportunity to interrupt drinking pattern or motivate a resistant patient
Free-standing alcoholism rehabilitation facilities	Nonmedical: lectures, nonpsychodynamic group counseling, AA, family sessions	Socially competent, middle class, working
Aversion-conditioning hospital	Strong medical orientation: detoxification, emetine or faradic conditioning, counseling, group therapy, education, hospital followup programs	Socially competent, upper class
Outpatient		
Private physicians' offices	Medical: Antabuse® maintenance, symptom management, involvement of spouse and family	Usually alcoholism is not primary complaint
Community mental health centers	Medical, psychological, social services	Broad spectrum of patients
Free-standing outpatient clinics	Medical, psychological, social services	Broad spectrum of patients
Day care	Varied	Broad spectrum of patients
Intermediate		
Halfway houses, quarterway houses, recovery homes	Peer-group orientation; food, shelter, supportive services in nondrinking atmosphere	Recovering alcoholics: ambulatory and mentally competent who usually have no spouse or immediate family

[a]Patient descriptors are only rough characterizations.

SOURCE: Office of Technology Assessment.

tion units and alcoholism rehabilitation units in general hospitals, 2) alcoholism treatment units in State and private psychiatric hospitals, and 3) free-standing alcoholism rehabilitation facilities.

Detoxification/Rehabilitation Units in General Hospitals

In addition to providing medical services to alcoholics not being treated primarily for their alcoholism (241), general hospitals have recently begun to provide services directly to alcoholics. This practice represents a change in the long tradition of hospitals refusing to serve anyone with a primary diagnosis of alcoholism.

Detoxification/rehabilitation units in general hospitals typically provide an initial detoxification and/or evaluation period, followed by a 3- to 4-week inpatient stay for rehabilitation. According to Diesenhaus (81), general hospitals stress evaluation of medical status and frequently use pharmacotherapy. They tend to admit alcoholics who are socially stable and who have experienced fewer years of heavy drinking.

Third-party medical insurance coverage is typically provided for inpatient care in general hospitals; Medicare provides coverage for up to 3 weeks of combined detoxification and rehabilitation in an inpatient medical setting (130).

Alcoholism Treatment Units in State and Private Psychiatric Hospitals

Psychiatric hospitals also provide inpatient care, but, as Diesenhaus (81) notes, there may be more stigma associated with "psychiatric" care than with "medical" care. Alcoholism treatment programs in State mental hospitals, in particular, have in the past been underfunded, accorded low status, staffed by untrained personnel (52) and regarded as ineffective (184,203). Their patients have typically been lower middle class and relatively disabled, both socially and vocationally (241).

The characteristics of the State and private psychiatric hospital population may be changing, however, as reimbursement for alcoholism treatment becomes more widely available. Private mental hospitals provide treatment to a substantial number of patients who abuse alcohol, although alcoholism may not be the primary diagnosis. The Alcoholic Recovery Program at the Menninger Hospital in Kansas uses a multivariant program that addresses the psychological, biological, spiritual, and social aspects of alcoholism (105). The 6- to 8-week treatment program consists of educational lectures, recreational activities under the direction of a leisure therapist, family sessions, group sessions, and nutritional advice, as well as restricted access to alcohol. Although physical evaluations are made, medical treatment is not a major focus. The Menninger program follows AA philosophy but uses a treatment team of professionals and paraprofessionals (including psychiatrists, nurses, mental health technicians, psychologists, social workers, alcoholism counselors, and medical internists).

Moore's analysis of a survey of private psychiatric hospitals found that the mainstay of these programs was individual and group psychotherapy, alcoholism education, AA, and Antabuse® (202). Psychiatric hospitalization is believed to be indicated when a severe psychiatric condition exists, regardless of its relationship to a drinking problem. It is also indicated when an opportunity to interrupt a drinking pattern or motivate a resistant patient is needed (7,201).

Free-Standing Alcoholism Rehabilitation Facilities

Free-standing alcoholism rehabilitation units are often nonprofit organizations, affiliated with but not necessarily located in hospitals, that provide inpatient programs with a nonmedical orientation, although medical and psychiatric support is also available (241,309). In these facilities, a therapeutic milieu is created in which alcoholic patients take some responsibility for program planning, activities, and ongoing maintenance. AA meetings are usually part of the community life, and family sessions are often a part of the program. Treatment includes lectures, nonpsychodynamic group counseling, family sessions, and attendance at AA meetings (241). Pattison (241) characterizes these programs, of which the Hazelden Foundation in Minnesota is a prototype, as having a "sense of 'elan,' commitment, and surety of purpose." They typically serve a socially competent, middle-class working clientele in a treatment program that lasts from 3 to 6 weeks.

Another type of free-standing rehabilitation facility has been called an **aversion-conditioning hospital** (241,295). Such facilities are often proprietary and offer residential treatment from 10 to 14 days. Their programs tend to attract socially competent, upper-class clients, and according to Pattison have a strong medical as opposed to a psychological orientation (241). Treatment consists first of detoxification, followed by emetine (chemical) aversion conditioning (in some cases, the aversive stimulus is an electric shock rather than a drug). Counseling, along with various forms of group therapy and education, are also offered as part of the treatment program (295, 317). In most cases, hospitals provide followup and continuing programs. The Raleigh Hills and Schick-Shadel hospital systems are examples of facilities that include aversion conditioning as an important component of their inpatient treatment.

Outpatient Care

In addition to services provided on an inpatient basis, some alcoholism services are provided on an outpatient basis in nonmedically oriented residential facilities and in a variety of other settings. Like inpatient facilities, outpatient facilities vary in the extent of their medical orientation. The more medically oriented outpatient facilities include: 1) private physicians' offices, 2) community mental health centers, 3) some free-standing outpatient clinics, and 4) day care hospitalization programs. The less medically oriented include the remaining free-standing outpatient clinics.

Private Physicians' Offices

Alcoholics who consult private physicians usually do not present a primary complaint of alcoholism. Nonetheless, they reportedly comprise 10 percent of general physician and internist case loads (84), with 70 percent of physicians in private practice seeing at least 10 alcoholics per month (197). Although general physicians do not

typically refer patients to alcoholism treatment programs (perhaps because the patients they see are less dysfunctional), they may provide other services. Such physicians may manage a program of Antabuse® maintenance, treat acute intoxication and mild withdrawal symptoms, use the doctor-patient relationship to engage patients in a treatment program, and involve the spouse and family in helping the patient deal with the problem (239).

Community Mental Health Centers

Community mental health centers are institutions formerly operated under guidelines of the Community Mental Health Center Amendments Act of 1975 (Public Law 94-63) or under State or local legislation modeled after the act. Such centers provide a broad range of community-based mental health services and treat alcoholism as only one of many problems presented by patients.

For insurance reimbursement, Health Care Financing Administration guidelines distinguish between hospital- and nonhospital-based community mental health centers and free-standing outpatient clinics (see below).

Free-Standing Outpatient Clinics

As defined by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), free-standing outpatient clinics are facilities that "one would enter only to receive alcoholism services" (217). These clinics provide a multiplicity of medical, psychological, and social services to a broad spectrum of patients. Treatment services may consist of outpatient individual, group, family, or marriage counseling; drug therapies; and vocational, social, and recreational services.

Medicare coverage for free-standing outpatient clinic patients is provided for services such as drug therapy, psychotherapy, and patient education that are reasonable and necessary and provided incident to a physician's professional service (130). Marital and family therapies are specifically excluded (131).

Day Care Hospitalization Programs

Day care is treatment provided by a facility in which the patient does not reside. In day care hospitalization programs, patients participate in a treatment program, with or without medication, for usually 5 or more hours per day, 5 or more days per week. Some of these treatment facilities are especially geared to alcoholics, while others serve a more general psychiatric population (216).

Day hospitalization programs per se are not covered by Medicare, although individual services provided in these programs may be covered under outpatient guidelines. Meals, transportation, and recreational and social activities are not covered.

Intermediate Care

For this study, residential programs that provide primarily rehabilitation services to patients are considered here to be intermediate care facilities (13). Many of the patients of such programs have formerly been treated in hospitals. Such facilities include halfway houses, quarterway houses, and recovery homes. Typically, intermediate care facilities are community-based and peer group-oriented residences. They attempt to provide food, shelter, and supportive services in a nondrinking atmosphere. Residents in these programs are considered recovering alcoholics. They are ambulatory and mentally competent. Typically, they are without spouse or immediate family. The facility seems to provide psychological support and help with problems such as reentry to the work force.

Other Settings

Alcoholism treatment services are provided to varying degrees by correctional facilities, the military, driving while intoxicated programs, business and industry, and the so-called skid-row system of agencies (344). Various Federal and local government agencies support alcoholism treatment programs in correctional and military facilities, but the contribution of these programs to alcoholism treatment, as well as the contribution of employee assistance programs, is relatively small. Most such programs serve only as referral sources to the kinds of programs discussed previously and do not provide direct treatment.

Utilization

Estimating the use of treatment settings is made difficult by the multiple sources of data and by the tendency of patients to seek and receive treatment in multiple settings, even over the course of relatively short time periods. Until recently, when authority for alcoholism treatment programs was given to States with Federal assistance through block grants, each NIAAA-funded treatment center and each project were required to collect and report data on treatment utilization.

In 1980, 460 NIAAA-funded projects reported serving almost 250,000 people (218). The vast majority (83 percent) of patients in NIAAA projects received outpatient treatment, sometimes in conjunction with inpatient treatment. Of the patients who received 24-hour residential care (some of these patients also receive outpatient care), 3 percent were hospital inpatients and 23 percent were in other facilities. The most common inpatient treatment was detoxification, either social (41 percent) or medical (31 percent). The most common outpatient service was individual counseling (50 percent), followed by group counseling (21 percent) and crisis intervention (11 percent). Approximately one-quarter of the patients received followup or aftercare.

Estimates of the number of people receiving treatment for alcoholism in other than NIAAA-funded projects during 1976 and 1977 have been made by Vischi and colleagues (322). According to their data (see table 3), the largest population is served by AA programs. As noted above, however, data such as theirs are problematic, because some patients may receive treatment through multiple sources (this is especially so for those participating in AA programs). Furthermore, to the extent that alcoholic patients are treated under other diagnoses, these figures underestimate the problem of alcoholism. Not known is the number of alcoholics who receive no treatment at all; estimates of that number are as high as 85 percent of the total population of alcoholics (216).

Table 3.—Estimated Treatment Utilization

	Population served
NIAAA-funded projects	197,000[a]
Other than NIAAA-funded projects:	
Short-stay hospitals	476,000
State and county mental hospitals	111,000
Private mental hospitals	11,000
Drug abuse facilities	17,000
Mental health facilities	286,000
Private physicians' offices	423,000
Community mental health centers	113,000
Outpatient psychiatric clinics	53,000
Halfway houses	36,000
Veterans Administration	133,000
Department of Defense	52,000
Department of Transportation (DWI)	28,000
Indian Health Service	27,000
Alcoholics Anonymous	671,000
Total	2,634,000

[a]The NIAAA data are for 1980, and the other data are for 1977.

SOURCE: T. R. Vischi, K. R. Jones, E. L. Shank, et al., *The Alcohol, Drug Abuse, and Mental Health Data Book* (Rockville, Md.: Alcohol, Drug Abuse, and Mental Health Administration, 1980); and H. Diesenhaus, "Current Trends in Treatment Programing for Problem Drinkers and Alcoholics," in *Prevention, Intervention, and Treatment: Concerns and Models*, Alcohol and Health Monograph No. 3 (Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration, 1982).

Treatment Providers

Another major issue in the treatment of alcoholism concerns what kind of staff would be most effective, and, more particularly, what degree of staff professionalization is required for treatment effectiveness. Prior to the entry of the psychology and psychiatry professionals in the 1970's, roles within the alcohol treatment work force were not distinct. Most treatment took place in nonmedical settings where alcoholism counselors served as primary therapists, administrators, support staff, advocates, and outreach workers. The entrance of professionally trained personnel diminished the role of alcoholism counselors. Physicians, psychiatrists, psychologists, and social workers took on supervisory roles.

According to figures compiled by the National Drug and Alcoholism Treatment Utilization Survey (cited by 54), the three largest general categories of workers in alcoholism treatment programs are administrative and support staff, counselors, and nurses. Further, counselors without professional degrees comprise the largest single category (17 percent) of direct service workers in "alcohol only" programs. Alcoholism counselors (degree unspecified) comprise 37 percent of the project staff in NIAAA-funded treatment centers (100). Although alcoholism counselors dominate the field, their distribution varies greatly by treatment setting. Halfway houses and free-standing clinics employ proportionately more counselors

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without professional degrees than do community mental health centers. Hospital programs rely primarily on medical staff (54).

Alcoholism counselors have objected to the over-professionalization of the treatment process, claiming that the "functional difference between them and professionals is unclear because both perform many of the same functions in the treatment process," although professionals get paid more (54). In addition, from the view of counselors who are themselves recovering alcoholics, professionalization actually threatens the potential success of alcoholism services, the key ingredient of which is self-help. There is little empirical evidence, however, to settle the issue of the relative success rate of the various occupational groups in the treatment of alcoholics.

CONCLUSIONS

The treatments used for alcoholism are diverse, including treatments based on medical and psychotherapeutic approaches, as well as treatments based on various other approaches, such as self-help programs based on the AA model. Most treatment programs combine a variety of techniques. Adding to the complex number of treatments is the fact that the settings where treatment is delivered differ from one another on a number of key dimensions, including outpatient versus inpatient treatments, staffing patterns, and the kinds of populations who choose or are chosen for the setting. Moreover, alcohol abuse is present in various population groups, although it may manifest itself differently and require different forms of treatment.

In comparing reviews and studies of alcohol treatment programs, this complexity of etiology, treatment, settings, and patients must be kept in mind. Many studies focus on a single aspect of treatment or explore a particular hypothesis, making comparisons between studies extremely difficult. General statements must be offered with great caution. The methodological issues underlying evaluation of treatment programs are reviewed in the next chapter.

4.
Methodological Issues in Evaluating the Effectiveness of Alcoholism Treatment

4.

Methodological Issues in Evaluating the Effectiveness of Alcoholism Treatment

The development of a body of research on alcoholism treatment is fairly recent, having occurred mainly during the past 20 years. Until the 1950's, treatment for alcoholism was more likely to have been incarceration or custodial care in State mental hospitals than to have been medical or psychological therapy (cf. 325). Thus, the lag in the development of a scientific research base is not surprising.

Even today, despite the rapid growth of a formal treatment system, evidence of treatment effectiveness* is often based on unsystematically collected data (46,76,135,297). Because of the limitations of available research, conclusions about the effectiveness of treatment for alcoholism are necessarily limited, although some tentative conclusions can be drawn. Such conclusions are presented in chapter 5. The present chapter analyzes the methodological problems in conducting and analyzing alcoholism treatment research. The goal in this chapter is to place the current state of scientific knowledge about treatment alternatives into a research perspective.

Because patient characteristics, treatment settings, services offered, and practitioner characteristics interact to affect treatment outcome, research on alcoholism treatment is complicated. The evaluation issues, however, are parallel to those involved in assessing other health care interventions (see, 226,227,229).

In assessing the quality of research conducted on alcoholism treatment effectiveness, the validity of the research evidence and the ability to generalize from it will be emphasized (229,350). For research to be valid and permit generalizations to be drawn, there must be clarity about what is being tested, what is being compared, which subject populations are involved in the research, and what is being measured. Operationally, these four factors refer to: 1) treatment design, 2) research design, 3) sampling, and 4) outcome measures.

*Effectiveness is the benefit as measured under average conditions of use (229). Efficacy is the health benefit as measured under controlled conditions such as those in a randomized clinical trial.

TREATMENT DESIGN

Treatment design issues involve the extent to which clarity about the "active ingredients" of the program being tested can be achieved. Questions such as whether the program involves a single treatment, a combination of treatments, or a combination of treatment and nontreatment factors must be answered. Often, because alcoholism treatment programs are multivariant, researchers are unable to identify separate effects (18,317). The extent to which researchers can measure the impact of any one component of the treatment is limited, of course, when all patients receive or have access to multiple components concurrently. Clarity about what the program includes is essential for attributing outcomes to particular treatments or treatment packages.

One solution to these problems is to group treatments in such a way as to be able to form treatment packages. Few would argue that a single treatment (e.g., psychotherapy) could alone reduce alcoholism problems (cf. 241). A single patient, especially when hospitalized or in a residential setting, may receive group therapy, antidepressants, and attend sessions of Alcoholics Anonymous (AA). There are various problems in analyzing treatment groupings, however. Lumping treatment programs under umbrella terms such as "inpatient" or "outpatient," without clarifying which specific services are offered or utilized, may obscure differences between treatment components. By lumping multiple treatment programs together, one is unable to decipher

which treatment is effective, for whom, and under what conditions (cf. 306).

Furthermore, even if coherent treatment packages can be developed, they may be difficult or undesirable to administer. This is particularly problematic if assignment of patients to treatment packages or components is required for research purposes. A research design that requires systematic assignment of treatment or segregation of services might undermine a basic treatment principle—that of involving patients in decisionmaking (306). Such research-based assignment criteria may also be troublesome for practitioners who, on the basis of clinical criteria, may want to control treatment regimens.

The alcoholism field is rife with intense feelings about treatment effectiveness and safety. Individual clinicians can cite examples of patients who have faced death, high economic costs, or health problems because of irresponsible treatments. Practitioners often have intense opinions, convictions, and reservations about the use of particular treatments. Putting treatments to the test, limiting the treatments available, withholding services, or providing treatments presumed ineffective will be resisted by many practitioners (46,47,189). Thus, practitioners have had, and will continue to have, a strong influence on the type of effectiveness research conducted.

RESEARCH DESIGN

A valid research design requires systematic comparisons. At minimum, the comparisons must involve a single group of patients measured before and after treatment. Optimally, they will involve two or more randomly assigned groups (an experimental group and a comparison or control group) of patients who are tested before and after treatment (see 350). The latter design is usually called a "true" experiment (67), or in health care research, a randomized clinical trial (RCT). RCTs are considered the most definitive experimental method for evaluating the efficacy or health benefits of a technology (229). The advantage of this design, in comparison to a nonrandom design, is that it allows differences in outcomes to be attributed more confidently to the treatment, and not to preexisting differences in the samples tested.

Evaluating research on the effectiveness of alcoholism treatment poses several difficulties for researchers interested in valid conclusions. Comparative data on treatment groups are typically not available, and most research merely tracks patients during and after treatment (135,189,297). For example, one study documented a 38-percent abstinence record at a 1-year followup for problem drinkers who received treatment at a 4-week residential treatment center (see 16). In the absence of comparative data—e.g., on individuals who did not receive treatment or who received alternative treatments—it is not possible to determine if the observed 38-percent abstinence rate represents natural improvement or if a higher or lower abstinence rate would have resulted from another type of treatment.

Although the absence of comparative data is the most fundamental deficit of the literature on the effectiveness of alcoholism treatment (16,317), other methodological problems also limit the implications that can be drawn. First, data are often presented in aggregate form—i.e., data on patient outcomes are often not differentiated by severity of initial symptoms or other patient characteristics. Social class information may be lacking, and important subpopulation differences may be obscured. In a study that does provide such sociodemographic breakdowns, patients treated at the Raleigh Hills Fair Oaks Hospital in California were reported (221) to have had 1-year abstinence rates that ranged from 36 percent (for Medicare-eligible disabled patients) to 73 percent (for married, employed patients). Age, gender, and social situation seem to affect significantly treatment effectiveness.

A related issue is that multivariate analyses that are useful for examining differences by factors such as age, race/ethnicity, social class, employment status, sex, and disability are typically un-

available (cf.77). Although there are several important exceptions, including a study by Armor and colleagues (13), studies that statistically control outcome data by demographic or other factors have not been conducted with many treatments. Such analyses present difficulties both in data collection and analysis and require large patient populations. The lack of controlled research hinders informed development of treatment strategies tailored to the needs of subpopulations.

Despite the methodological problems just discussed, alcoholism treatment researchers seek to generate systematic, experimental designs with comparison group information and multiple, longitudinal outcome measures. Practical dilemmas, however, may undermine this aim. For example, random assignment of patients to conditions does not ensure that patients will accept their assigned treatment, nor that they will remain in treatment (18), although, in some cases, acceptance of or dropping out of treatment is a useful outcome measure.

SAMPLING

Sampling refers to decisions concerning the subjects selected for research. Issues of sampling concern: 1) eligibility for treatment, 2) selection for participation in research, and 3) availability for followup research. If the general population of alcoholics is not represented in the research samples, or if certain groups (e.g., working class adults or women; cf. 18) are underrepresented, the ability to generalize from research findings is limited.

Perhaps the most important sampling problem is that individuals who receive treatment services cannot be assumed to form a representative group of problem drinkers (18). Many programs explicitly exclude those patients who have poor prognoses for recovery—particularly those from lower income groups and/or the unemployed. Even without exclusion criteria, individuals who elect treatment undoubtedly differ from those who do not (46,135). Those who receive treatment may be more visible (hence, their referral to treatment), more socially connected to others (who encourage treatment seeking), more motivated (and so seek treatment), and more confident of success (willing to undergo treatment). It is also possible that those who seek treatment see themselves as more helpless (and thus reliant on others for assistance), more intrusive (and so referred more readily into treatment), more troublesome (and, perhaps, pushed into treatment), or more abusive (and so more likely to be mandated into treatment). The absence of data on alcohol abusers who do not seek treatment limits the ability to generalize and the establishment of realistic spontaneous remission rates (see 290,315).

Sampling biases involve not only who constitutes the client population, but who is available for and willing to be involved in research, especially in the case of research that involves followup and long-term commitment to a research project (cf. 18,189,272). The probability of obtaining a representative population of alcoholics in treatment and not in treatment is remote.

Even if one were to obtain a representative population of alcoholics or problem drinkers, differences remain in terms of which patients receive different treatments, which patients are available for research, and which patients can be followed up on. Mandell (189), among others, has demonstrated that middle- and upper-middle-class patients are more likely to receive treatments covered by private insurance policies and to be referred by employers. Lower-class alcoholics, in contrast, are more likely to receive services paid for by State and local governments. Although the evidence is not clear cut, there appear to be differences in what types of treatments are received by each of these groups. If, indeed, different kinds of patient groups receive different kinds of services, merely comparing the outcomes will convey little about the treatments' effects across patient populations.

Who is available for followup, and how that affects the results of outcome studies, is a problem that has plagued much outcome research. As Baekeland, Lundwall, and Kissin (18) point out, mortality rates for alcoholics are high. Alcoholics drop out, disappear, and reject treatment at numerous points throughout the process. If there are systematic differences between dropouts and those alcoholics who remain in treatment (and it is reasonable to assume that there are), followup data are limited to an understanding of those who remain in treatment. There is some evidence that those who are difficult to follow up have the poorest treatment outcomes (204), although contrary evidence is also available (cf. 250).

OUTCOME MEASURES

Finally, the way in which treatment outcomes are measured significantly affects the interpretation of alcoholism treatment research. Studies of alcoholism treatment often use indirect outcomes or a combination of outcome measures. Others may measure the same effect differently. Self-reports on drinking behavior, interviews with spouses, supervisor-based job productivity reports, blood-alcohol levels, psychological improvement, or even recorded attendance at a treatment center may be used as outcome measures. The degree to which different studies use different conceptual outcomes, operational outcomes, and measurement techniques limits the comparisons that can be made about treatments.

Much of the discussion about outcome measures has focused on self-reports. Self-reports are often believed to be low in accuracy (96). Alcoholics may deny that they have a problem (351), the alcohol may have affected their memory (25), and, in general, it is socially undesirable to report alcohol intake. Reporting high use may affect the patient's job and self-esteem, or may be perceived as unhelpful to the researcher (cf. 18). However, despite sound reasons why self-reports should yield unreliable results, a number of studies report high concordance between self-reports of use and physiological measures (112,250), although physiological measures may be less-than-valid indicators (160).

Controversy over what should be the measure of successful outcomes in treating alcohol problems has not really been resolved. The criteria of abstinence from alcohol use has, traditionally, been used as the single measure of treatment effectiveness. Some studies have also measured various behaviors related to drinking—e.g., frequency of drinking, number of ounces of alcohol ingested, number of binges, days of abstinence, number of relapses, and percentages of days without alcohol-related problems. More recently, other outcome measures, such as work adjustment, family adjustment, problems with the law, psychological well-being, and continuation of treatment, have been utilized. Physical health has been another important criterion and relates importantly to cost-benefit assessments of treatment (see ch. 6).

A major debate in recent years has focused on whether "controlled drinking" or "nonproblem drinking" can be considered a successful outcome of alcohol treatment (cf. 132). Sobell and Sobell (302), in particular, challenge the unitary view that alcoholism is a single syndrome whose treatment goal is abstinence (cf. 245). They argue that the exclusive use of abstinence as the outcome obscures partial improvement, neglects improvements in other areas of life functioning, is difficult to validate, and represents a narrow understanding of the multifaceted alcoholism syndrome. As described in chapter 5, however, the view that controlled drinking is the desirable outcome of treatment has been challenged by data indicating that the ability to learn "controlled drinking" is unrelated to long-term remission (246).

Pattison (237) and Gerard, Saenger, and Wile (113) present data indicating that abstinence does not necessarily result in improvement in an alcoholic's problems. In some cases, once abstinence is achieved, problems in other areas increase. The meaning of such outcome assessments is not clear. It may reflect either longstanding health problems or relapse. Emrick (94) reviewed 265 alcohol treat-

ment studies to test the relationship of drinking to other outcome measures. He found that in more than two-thirds of the cases, drinking outcome related positively to outcomes in other dimensions.

The solution to these methodological problems would seem to be multidimensional measurements of outcome. Indeed, such a recommendation is strongly encouraged by recent methodological reviews (47,102,297).

CONCLUSIONS

Conducting outcome evaluation research on alcoholism treatments is difficult. Since these difficulties are reflected in current evaluations of the alcoholism problem, many presently urgent policy questions can probably not be answered by available research. Much of this research is flawed by problems in design, sampling, or outcome measurement. Nevertheless, the "whole" of available research on alcoholism is probably greater than the sum of its parts. By carefully considering the results of individual studies, each of which handles somewhat different methodological problems, conclusions can be drawn from the substantial body of literature.

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5.
Research on the Effectiveness of Alcoholism Treatment

5.
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Despite the lack of well-controlled and generalizable research on the efficacy and effectiveness of treatments for alcoholism, there is a vast literature that describes and analyzes treatment effects. The literature goes back as many years as alcoholism and alcohol abuse have been problems (see 351). In recent years, the amount of work has dramatically increased and its quality has improved (cf. 32,297). In this chapter, the research literature on treatment effectiveness is reviewed. An effort is made not to dismiss any body of research, but to point out inherent limitations and inferential problems. In addition to providing background for congressional consideration of reimbursement policies, the present review strongly suggests that consideration should be given to ways of increasing and improving research conducted on alcoholism.

In the following section, several of the principal reviews of available literature are described and analyzed. These reviews cover much of the research available (except recent and ongoing studies) and summarize current wisdom about alcoholism treatments. In the succeeding section, specific studies related to particular treatment settings and modalities are analyzed.

REVIEWS OF EFFECTIVENESS RESEARCH

As the literature on the effects of alcoholism treatment has developed, a number of investigators have attempted to review and summarize research evidence. Recently, the number of such reviews has increased, and while the reviews generally arrive at similar conclusions, each focuses on a somewhat different literature base and applies a different analytical focus. In selecting reviews for discussion here, an effort was made to include prominent reviews that assess the literature most comprehensively.

Voegtlin and Lemere

In the earliest comprehensive review of treatment effectiveness, Voegtlin and Lemere (325) considered over 100 studies that appeared in the literature between 1909 and 1940. Their review separated psychological from physiological treatments for alcoholism and included within each category many treatments that today would not be considered formal psychological or medical treatments. For example, incarceration was considered a crude psychological treatment; unscientifically based therapies, such as dietary restrictions on salt and water, were categorized as physiological.

Voegtlin and Lemere concluded that poor "statistical" evidence existed and that none of the treatments then available for alcoholism had proven effective. In a systematic review of each treatment modality, however, they did suggest that some techniques showed good effects and appeared promising. Among these were treatments such as inpatient psychotherapy and certain drug therapies. What seems clear from Voegtlin and Lemere's review, and has been partially supported by later reviews, is that treatments for alcoholism are differentially effective for particular populations and that treatments offered in combination seem more effective.

Emrick

Emrick's (93,94,95) reviews of treatment effectiveness research which appeared initially in 1974 and 1975, although not the first work to appear

subsequent to Voegtlin and Lemere's review are important because of their emphases on methodologically acceptable studies. (Hill and Blane's earlier review in 1967 of psychotherapeutic methods of treating alcoholics (135; see 32) found that only 2 out of 49 available studies met minimum methodological standards. In each of Emrick's reports, the goal was to review research conclusions comprehensively as to effective treatment.

In 1974, Emrick (94) reviewed 271 reports found in the alcoholism literature published between 1952 and 1971. He noted that 67 percent of the 13 817 patients in these studies either improved or were abstinent at followup. Emrick's conclusion was that "once an alcoholic has decided to do something about his drinking and accepts help, he stands a good chance of improving." Emrick cautioned, however, that no evidence documents that one treatment modality is more effective than another. "The weight of present evidence," he wrote, "is overwhelmingly against technique variables being powerful determinants of long-term outcome." Although Emrick seemed to indicate that many alcoholics can stop drinking with minimal or no treatment, and that abstinence rates do not differ between untreated and minimally treated alcoholics, he also maintained that rate of improvement correlates positively with amount of treatment received: 42 percent of alcoholics improved with little or no treatment, and 63 percent improved with treatment.

An update (95) of Emrick's original review added 126 studies of "psychologically oriented" treatments for alcoholism to those studies previously reviewed. The focus of this review was primarily on the effects of treatment versus those of no treatment. However, the results are difficult to interpret because there were relatively few studies with no-treatment conditions and because patient characteristics were not controlled. Emrick also included a group of studies with minimal treatments (fewer than five outpatient visits or 2-weeks' inpatient treatment). He found no significant differences in either abstinence or improvement rates between the no- and minimal-treatment studies (13 and 21 percent abstinent, respectively, and 41 and 43 percent at least somewhat improved, respectively). He did, however, find that more than minimal treatment had an effect on abstinence and improvement rates. Twenty-eight percent of those with more than minimal treatment were abstinent, and 63.1 percent were improved after 6 months or more after treatment. It appears that, as Emrick stated, treatment "seems to increase an alcoholic's chances of at least reducing his [or her] problem."

Emrick's last review (93), published in 1979, focused exclusively on randomized clinical trials of alcoholism treatment. Such studies deal with the most significant confounding factor in alcoholism research—the biases that occur when patients select their own particular forms of treatment. Emrick documented 90 studies that used random assignment of patients to two or more treatments. Almost all studies he reviewed compared treatments to one another, rather than to "no treatment." In general, Emrick was able to distinguish few differences. There seemed to be more evidence of the efficacy of behavioral approaches (including aversion training and systematic desensitization). For nonbehavioral approaches (including inpatient treatment and outpatient psychotherapy), brief interventions were as successful as longer ones.

Although it might be concluded from Emrick's reviews that treatment for alcoholism is neither efficacious nor effective, the limits of the research considered in his analyses should be recognized. In particular, the review of randomized clinical trials of treatment is limited by the fact that the studies tended to be behavioral studies with very specific objectives. What is clear is that experimental clinical research was not available at the time of Emrick's reviews to answer the questions about treatment efficacy.

Baekeland, Lundwall, and Kissin

Shortly after Emrick's initial work appeared in 1974, Baekeland, Lundwall, and Kissin (18; see also 16) reviewed the state of knowledge about the effectiveness of particular treatments for alcoholism. Their comprehensive review analyzed research evidence for each of the treatment modalities then in use. They separately reviewed inpatient and outpatient treatments (although these were not independent categories) along with psy-

chotherapeutic, drug, and sociocultural treatments.

Their substantive conclusions are difficult to summarize. For each of the settings and treatment modalities, some evidence of successful outcome was found. For example, the investigators' analysis of 30 studies of inpatient treatment for alcoholism indicated improvement rates of almost 50 percent. When corrected for attrition from the study sample and spontaneous remission, however, the improvement rates were somewhat lower, approximately 30 percent. In comparing inpatient treatment with outpatient care, Baekeland and colleagues' conclusion was similar to Emrick's (94,95): although methodological caveats apply, research does not demonstrate that inpatient care offers greater likelihood of successful treatment than outpatient treatment.

One problem identified was that characteristics of the patient, rather than the treatment, seemed to affect outcome importantly. The issue is complex because one of the central differences between patients may be their persistence in continuing treatment. Patients with stable marital and occupational status and higher socioeconomic status have better outcomes in that they are both better able to help themselves and respond better to treatment.

It is also clear from the Baekeland reviews that there are considerable differences as to who receives or takes advantage of particular treatments. One example is Alcoholics Anonymous (AA). According to Baekeland and colleagues, the large membership AA has attracted is not representative of alcoholics. For various reasons, there are many alcoholics for whom the program is not a good option. The question, then, is whether AA's reported effectiveness is really a function of self-selection by potential members with the best prognoses.

Costello

Another systematic review of the alcoholism treatment and evaluation literature, by Costello (71,72,73), appeared in 1975. In his first report (71), Costello analyzed the results of 58 treatment evaluations published between 1951 and 1973. A followup report (72) separately analyzed 23 of these studies that had the longest term followup (2 years). In a 1977 update (74) of this research base, 22 additional studies representing more recent approaches were located and compared to the original set. Costello's approach is similar to that of other contemporary reviewers: although he does not conduct a formal synthesis (350), his goal is to compare systematically the results of available investigations.

Costello rated studies according to outcome and tried to determine if differences in the characteristics of the treatment programs were related to the outcomes (71,72). Studies were grouped in five categories, from best to poorest, on the basis of both the percentage of successful abstainers and the percentage of problem drinkers. The average percentages, in Costello's initial analysis, varied from 12 percent successes and 60 percent problems to 45 percent successes and 44 percent problems. The percentage of patients who were lost to followup or who died were kept separately.

The findings, which were consistent for both the initial and later samples, indicated that small programs using a variety of intensive techniques (e.g., inpatient care, drugs, psychotherapy) were most successful. The findings were ambiguous, however, and it was also the case that programs using stringent patient selection criteria were most successful. Although it might be viewed that the research was designed to achieve the best outcomes, this finding may also demonstrate the value of providing intensive therapy only when it has a reasonable chance of success. Like other reviewers, Costello found that patients with characteristics such as stable marital and occupational status were more likely to benefit from treatment.

Costello's 1977 update (74) of his 1975 work further validated his initial conclusions. Although a very small increase in successful outcomes and reduction in problem drinking can be detected overall, the range of outcomes is about the same. This suggests that over a relatively long period of time approximately 45 percent of patients in good treatment programs can be expected to maintain sobriety (to drink without problems), and an almost similar rate of patients can be expected to have relapses. It is difficult to know how to interpret these rates. Compared with treatment

success rates for some terminal illnesses, the success rates are good; when viewed against spontaneous remission rates of perhaps 30 percent, they appear less promising. A key question is to what extent the outcome of treatment for alcoholism is determined by patient characteristics.

Rand Studies

The so-called Rand studies, which first appeared in 1976 and 1980 and have been a focal point of debate and policy about alcoholism treatment, are not actually reviews of the alcoholism literature. The studies represent followups at 6 and 18 months (13) and 4 years (250) of patients treated at the National Institute on Alcohol Abuse and Alcoholism (NIAAA) Alcoholism Treatment Centers (ATCs). The importance of the Rand studies is that they followed a large sample of alcoholic patients, who received a wide variety of treatments, and systematically assessed their patterns of drinking.

In the initial study (13), a research team headed by Armor and colleagues considered data from almost 2,000 patients treated at eight ATCs. The investigators analyzed data at 6 and 18 months after treatment. At the 6-month followup, 68 percent of patients completing treatment showed improvements in their drinking behavior. At the 18-month followup, the results were similar (67 percent showed improvement): 24 percent had been abstinent for at least 6 months, 21 percent had been abstinent for 1 month, and the remaining 22 percent were characterized as normal drinkers. Patients were considered to be in remission if they either abstained from drinking or engaged in normal drinking (moderate quantities without signs of impairment). By this criterion, 68 percent of NIAAA patients were in remission at 6 months and 67 percent at 18 months; furthermore, relapse rates did not seem related to ability to abstain. Fifty-three percent of clients who made only a single contact with an ATC (the "untreated" population) were in remission.

The Rand studies generated intense controversy (see, e.g., 96,213,267) because they suggested that it was not necessary that abstinence be the central treatment goal of alcoholism therapies. Critiques of the Rand analyses indicated that the data were not valid for several reasons: the ATC sites were not randomly selected; about 80 percent of the patients were lost to followup; the report relied on self-reports; and the criteria for normal drinking were not stringent enough. The investigators countered by presenting data indicating that the patients lost to followup were not different from those for whom data were available and that the self-reports were valid. In addition, the use of more stringent definitions of impairment would have reduced the proportion of normal drinkers from 22 percent to, at most, 17 percent.

In a followup to the initial survey (250), Rand researchers (led by Polich and colleagues) collected and analyzed data from a random sample of over 900 patients from the first study. Followup interview data were obtained from 85 percent of the sample. An analysis of effects of nonresponse and sample bias seemed to indicate little distortion. Separate validity checks were conducted on self-report data by having a random subsample of participants take breath tests to evaluate their blood alcohol concentration. In addition, family members were interviewed. Finally, more stringent, empirically based definitions of normal drinking were used. These checks yielded high correlations between self-reports and physiological measures, although the results for reports by significant others* were unclear. Most importantly, adjustments for overreporting "no problems" seemed to make little difference in the outcome rates reported without correction.

The principal finding of the subsequent Rand analyses was that although a large percentage of alcoholics go into remission for periods of time, a substantial proportion relapse and reenter treatment. Only 7 percent of the total sample abstained throughout the entire 4-year period, and nearly 15 percent died (mortality was 2.5 times what would have been expected). Nonetheless, there was a significant decrease in the percentage of individuals with very serious alcoholism problems. At initial treatment, over 90 percent were drinking with serious problems according to NIAAA criteria, whereas after 4 years, only 54 percent were drinking with serious problems. The policy

*Significant others are individuals important to the alcoholic. They can be friends or family.

significance of this reduction is difficult to determine. The results may be due to individuals entering treatment at the worst phase of their problem (for these individuals, some improvement would be expected). Improvement may also not be directly attributable to treatment. No treatment method in particular seemed to achieve consistently positive results. Although there are a number of diverse treatments that appear to have positive effects, it is difficult to draw clear conclusions in the absence of random assignment and deliberate treatment-patient matches.

STUDIES OF TREATMENT SETTINGS AND SPECIFIC MODALITIES

The above reviews suggest a need for providing various treatments for alcoholism, although evidence on the superiority of particular treatments is lacking. The important policy issue—i.e., the extent to which alcoholism treatment should be supported—is thus only partially addressed. The question of which treatments have the best demonstrated effectiveness under particular conditions for which patients remains unanswered. Below, additional evaluative research on a number of specific treatments and settings is reviewed. Both the setting of treatment (most importantly, inpatient v. outpatient) is considered and the use of treatment modalities such as psychotherapy, drugs (including chemical aversion therapy), and self-help treatments (AA) are considered. Although not a comprehensive review, the discussion covers treatments that are the most frequently employed and are the current focal points of discussion about alcoholism treatment.

Setting

Perhaps the most controversial treatment issue concerns the use of inpatient v. outpatient treatment settings. The necessity for hospitalizing alcoholics—i.e., for providing treatment over and above that necessary for detoxification or dealing with medical complications of ethanol use, is both a substantive problem (relating to treatment goals and effectiveness) and a significant policy problem (because of the high costs associated with hospitalization). Unfortunately, assessments of the effectiveness of particular settings are difficult to separate from the effectiveness of treatment modalities. The setting of treatment is only one factor influencing treatment effectiveness. The review below deals with research comparing outcomes by setting, although a more complete analysis requires parallel consideration of evaluative data for specific modalities.

There seems to be consensus across a number of literature reviews that inpatient treatment is not superior to outpatient care for alcoholism (cf. 92), but most of the available research is flawed because the effects of treatment variables cannot be distinguished from the effects of patient variables. Thus, more severely impaired patients and those of higher socioeconomic status are more typically assigned to, or arrange to receive, inpatient treatment. Furthermore, a distinction is not often made between hospital- and non-hospital-based inpatient (i.e., residential) treatment, although the nature of such settings may be very different (317). Not making this distinction results in the aggregating of results from different types of inpatient settings in literature reviews. Because alcoholism treatment takes place in a variety of hospital settings it may be important to distinguish between their effects.

Several studies have specifically addressed the question of inpatient v. outpatient efficacy or effectiveness. Reviews by Costello (71,72,73) and Baekeland (16) addressed the inpatient-outpatient issue, and the Rand analyses (13,250) compared inpatient and outpatient care. The reviews and studies on which the the reviews' conclusions are based are discussed below. Length of treatment as an outcome variable is also discussed.

Ritson

Ritson (263,264) looked at 6-month and 1-year outcomes in two groups of patients. He found no significant group differences between the group that received outpatient care (individual therapy) and the one that received inpatient treatment

(group therapy and AA). However, as apparent, this study confounded treatment modalities with settings. In addition, patients were probably not randomly assigned to experimental groups.

Edwards; Edwards and Guthrie

A series of studies by Edwards and colleagues (87,88,89,90) has been well received critically, because Edwards and his associates randomly assigned socially stable patients to different settings for the same treatment modalities. Well-matched patients were randomly assigned to either 2 months of "intensive" outpatient care followed by outpatient aftercare or to 8.9 weeks of inpatient treatment followed by outpatient aftercare.

Outpatient care was found to be more efficacious with regard to global ratings but not until 12 months after treatment. The populations differed somewhat in marital status (80 percent of the outpatients were married v. 60 percent of the inpatients), although the differences were probably of no consequence. The findings are limited by the exclusion of some treatment modalities (e.g., group therapy) and of alcoholics with severe mental or physical disease.

Wanberg, Horn, and Fairchild

In apparent contradiction to Edwards' results, Wanberg and colleagues (330) found 2 weeks of intensive inpatient treatment to be more effective with respect to drinking indexes 90 to 100 days after intake than three or more in-community treatment sessions. In this study, both types of initial treatment were followed by outpatient group therapy. The study differed from the Edwards studies in that 51 percent of its patients were married and the length of both intensive treatment and evaluation in this study were longer. In addition, outpatient treatment in the Edwards studies was intensive. It is possible that any short-term differences between the Wanberg groups might have disappeared or changed direction at a later point in time.

Gallant

Gallant (107) investigated a population of chronic offenders brought before a municipal court. Individuals convicted of an alcohol-related offense were randomly assigned to either 1 month of coerced inpatient treatment followed by 5 months of coerced outpatient treatment or 6 months of coerced outpatient treatment. Gallant found no differences between the inpatient and outpatient groups on outcome measures related to alcohol use; however, 44 percent of the offenders assigned to inpatient care received necessary medical attention.

Baekeland

Baekeland's (16) review analyzed improvement rates and found that uncorrected improvement rates were essentially the same for inpatient and outpatient settings (41.5 percent). When the rates were corrected for sample attrition and spontaneous improvement, however, outpatient settings (with an average improvement rate of 36 percent) were slightly more effective than inpatient settings (with an improvement rate of 29.9 percent).

Costello

Costello's report (71,72) which used the statistical technique of cluster analysis to discover the distinctions between studies reporting outcomes of very good, good, intermediate, poor, and very poor concluded, on the other hand, that the inpatient unit was a valuable asset to a treatment program. However, it also concluded that an inpatient setting without an intensive community milieu and aggressive outpatient followup would be of limited value.

Ten of the studies characterized as having very good outcomes combined inpatient with outpatient treatment; two used outpatient only, and two, inpatient only. The studies reporting very good outcomes were also characterized by a variety of other characteristics associated with good outcomes: the use of screening procedures that eliminated high-risk clients, considerable use of Antabuse® or its equivalent, social casework, family therapy, involvement of employers, and behavioral therapy.

Costello's analysis is limited by the inclusion of both controlled and noncontrolled evaluation studies (cf. 18, for a discussion of these limitations). The previously discussed Edwards (88), Edwards and Guthrie (90), and Ritson (263,264)

studies were included in the group with very good outcomes.

Rand Studies

The 18-month followup study of patients treated at NIAAA ATCs by Armor and colleagues' (initial Rand analyses, 13) found only minor variations in outcomes among hospital, intermediate, and outpatient settings. Furthermore, these variations virtually disappeared when the analysis controlled for client characteristics. The 4-year followup by Polich and colleagues' (subsequent Rand analyses, 250) found no differences between outcomes for hospital and outpatient settings.

In the Polich analysis, intermediate care was combined with outpatient care. The Polich analysis found a positive correlation between the amount of treatment and the followup status in outpatient (but not inpatient) settings. The authors hesitated to attribute these differences to the impact of the outpatient setting because of the possibility that patient selection phenomena might have been responsible for the relationship. Better motivated patients might have remained in treatment longer, or more favorable treatment environments might have encouraged more promising patients to stay in treatment. The authors were unable to test this possibility with the data available.

Emrick

In general, according to Emrick (92), controlled studies of psychotherapeutic treatments have not found any positive effects for lengthy intensive treatment either on an inpatient or outpatient basis. An important methodological limitation of available controlled studies, however, is that none of these studies used an intensive treatment longer than 3.5 months of inpatient care; all of these studies used relatively brief treatments. The effects of long-term efforts, some of which are oriented to making character changes, have not been evaluated. In addition, research subjects who receive differing amounts of treatment typically receive different kinds of treatment as well, making it difficult to distinguish the type of therapy from its intensity or duration.

Behavioral Therapies

In the last 20 years, the most developed uses of psychotherapy for alcoholism problems have been in the application of behavioral conditioning techniques (see 208). Most behavioral therapies rely on positive reinforcement, cognitive change, and the development of new skills, although aversion conditioning is also employed (see below). Behavioral techniques, as described in chapter 3, include blood alcohol level discrimination training, use of videotapes of patients when intoxicated, role playing, cognitive behavior therapy, and alternatives counseling. Some researchers have combined these approaches into treatment packages and have attempted to individualize the treatments to meet specific patient needs. There has been some research interest about these broad-spectrum approaches. Three of the most important research efforts are reviewed below.

Individualized Behavior Therapy for Alcoholics

A treatment program called the Individualized Behavior Therapy for Alcoholics (IBTA) was developed by Sobell and Sobell (298,301,302) and has been extensively tested by the program designers. Their findings indicated that regardless of whether the assigned treatment goal was "abstinence" or "controlled drinking," many of the patients who received treatment were drinking in a nonproblematic way compared to the patients in a control group. The investigators also found, ironically, that those patients who were assigned "controlled drinking" as a goal had more abstinent days than those assigned "abstinence." Another important aspect of this study was that the package prescribed a thorough analysis of each individual's behavioral determinants for drinking. A new repertoire of social behavior, designed to replace the old behavioral patterns, was carefully rehearsed. Changing attitudes toward drinking was a second major focus. Sobell and Sobell reported successful outcomes with IBTA (302).

Sobell and Sobell's research on the IBTA has been criticized because it used the treatment goal of "controlled drinking;" recently, serious questions have been raised about the appropriateness of this research method and its conclusions. A

followup study by Pendery, Maltzman, and West (246) of patients in the controlled drinking condition of the Sobell and Sobell 1972 study sharply contradicts the original study's findings. Pendery and associates report that after 10 years, only 1 of 20 subjects was drinking "normally" and without problems. Four of the original subjects had died of alcohol-related causes, eight were drinking excessively, one was not found for followup, and six were totally abstinent (although each had had serious drinking problems since the experiment). According to Pendery and associates, learning how to control drinking may be impossible for an alcoholic, and abstinence is the only workable treatment goal.

Three recent studies by Vogler and colleagues (326,327,328) tested a package treatment program similar to IBTA. In one Vogler study (326), an overall success rate of about 65 percent was reported (i.e., 65 percent were not problem drinkers after a year). There was no reported difference between the two matched groups of hospitalized chronic alcoholics. One group received the full broad-spectrum package, while the second group received only the educational component, counseling, and alternatives training.

In another Vogler study (327), four groups of problem drinkers each received different combinations of treatments. Again, all groups showed improvements, and there were no differences between groups. In this attempt to "unpackage" the broad-spectrum approach, Vogler found groups with alcohol education alone did just as well as groups with more complex treatments. There was an 80-percent attrition rate in this study, limiting the weight that can be given the findings.

Pomerleau's study (252) monitored middle-class alcoholics who were more motivated than subjects in other studies and who were functioning at higher levels. Of 18 patients treated with behavioral techniques, 16 continued in treatment. Of 14 treated with "traditional" methods, only 6 remained in treatment. Because the numbers are so small, the conclusion that behavioral techniques may have advantages over some other therapeutic approaches can be made only tentatively.

Aversion Therapy

In the 1940's, Voegtlin, working at the Shadel Hospital in Seattle, described the use of chemical aversion therapy and reported aversion as a successful treatment (324). Of the 4,096 patients who received chemical aversion therapy, 42 percent had remained totally abstinent and 60 percent were abstinent for at least a year. Thimann, in a study conducted at about the same time, reported a 51-percent success rate (312). More recently, Wiens and colleagues, working at the Raleigh Hills Portland Hospital, found that 63 percent who received the treatment were abstinent for a year (335). These relatively positive findings of the effectiveness of aversion therapy have been replicated at several other Raleigh Hills and Schick-Shadel hospitals.

The Raleigh Hills and Schick-Shadel hospitals use a variety of methods for treating alcoholics, including counseling and AA, but aversion counterconditioning therapy, using the drug emetine, is a central element of their programs (see ch. 3). Patients, who are typically hospitalized for 11 to 14 days (including detoxification), receive aversive conditioning therapy every other day (about five times). Then, as outpatients, they return for reconditioning aversion therapy up to seven times a year.

Despite the relatively high rates of reported abstinence, reviews of aversion therapy are cautious in their analysis of its effects based on nonexperimental studies. Nathan and Lipscomb, for example, maintain that positive results are probably a function of the types of patients that enter these treatments (209). These investigators believe that patients at private hospitals, such as Raleigh Hills, have better prognoses at the beginning of treatment, especially because of their higher socioeconomic status. The data of Neuberger and colleagues (220,221) provide some support for Nathan and Lipscomb's contention. In two samples from 1975 and 1976 (220), these investigators found poorer results than typical (1-year posttreatment abstinence rates of 39 and 50 percent, respectively), and they attributed these to the fact that the samples included a larger number of Medicare, unemployed, and/or unmarried patients.

Their most recent data (221) indicate that disabled Medicare patients have relatively poor outcomes (36-percent abstinence rate, 1-year post treatment), but validate earlier findings of good outcomes for socially stable patients (up to 73-percent abstinence rate for married and employed patients).

The principal question about evidence on aversion therapy is whether treatment outcomes can be attributed to demographic factors, to the use of a broad-spectrum treatment program, or to aversion conditioning itself. Definitive answers to such questions will have to await controlled tests of components of programs that use aversion therapy. It should be noted, however, that patients who successfully abstain following treatment attribute their success to aversion therapy, while those who continue drinking think the most valuable program component is counseling (316). In addition, there is clear evidence that the number of reinforcement sessions following treatment is importantly related to abstinence. For certain patients, in particular those with socially stable backgrounds, aversion therapy may be a useful aid and worth the considerable discomfort it involves. For other patients, perhaps those unmotivated or for whom nausea is not a powerful aversive stimulus, it may not be effective.

There is some basic research evidence of aversion therapy's usefulness (e.g., 55), as well as theoretical arguments to support its efficacy (343). One theoretical problem is that the mechanism underlying its effects may be more complicated than learned association, and cognitive factors may interfere with behavioral conditioning. The effectiveness of aversion therapy may also depend on the technique used to develop the aversive state. Emetine-induced nausea is the most widely used stimulus, but there are many alternatives. Electric shocks have been used in some cases, although not very successfully (209). Some success has been reported with imagined aversive stimuli (57), but this technique is not widely used.

Various Government agencies have reviewed chemical aversion therapy. The Food and Drug Administration, while it has not approved the use of emetine, does not believe that the evidence on emetine's hazards warrants the imposition of regulations (222). A Public Health Service review recommended that chemical aversion therapy be covered under Medicare (see 222). An Alcohol, Drug Abuse, and Mental Health Administration/NIAAA panel that met in January 1980 also concluded that chemical aversion therapy is probably an effective treatment, but that the lack of controlled trials leaves the question of its safety open (222,261). They sought new research to provide scientific data on safety and efficacy.

Nonbehavioral Psychotherapies

Although there has been considerable research in recent years on the effectiveness of traditional psychotherapies (cf. 227), their use for treating alcoholism has not been validated. In the first review of psychologically oriented treatments, Voegtlin and Lemere (325) found little usable statistical information to indicate the success of psychoanalytically based therapy. Similarly, Hill and Blane, in their review of psychotherapy outcome studies (135), found that methodological problems made conclusions about the effectiveness of psychotherapy difficult to support. Baekeland's (16,18) and Emrick's (92,93) reviews of controlled studies found no treatment effects for a variety of traditional outpatient psychotherapies compared with each other or with other treatments; only one study Emrick reviewed found that traditional insight-oriented therapy resulted in better economic and legal outcomes than did contact with AA. Emrick found only eight controlled studies, many of which varied aspects of treatment other than the type of therapy (e.g., abstinence v. controlled drinking as a goal of treatment).

The confounding of treatments is illustrated by the controlled study conducted by Corder, Corder, and Laidlaw, which supported the effectiveness of couples therapy (70). In this study, experimental subjects received, in addition to 4 weeks of treatment for alcoholism, an intensive 4-day workshop. The workshop included a couples therapy session, videotape analysis, lectures and discussions, and meetings with AA and other follow-up treatment representatives. Seven months after treatment, 55 percent of those in the couples group were abstinent, and more experimental subjects

were employed and involved in aftercare than were controls. It is difficult to determine which aspects of treatment made the essential difference.

In addition to methodological problems with existing studies, many approaches that are used widely with nonalcoholics (e.g., Gestalt therapy) have not been adequately investigated for use with alcoholics and alcohol abusers. Research comparing different lengths of treatment, from very brief (one to six sessions) to longer treatments (including extended aftercare), is also needed.

Drug Treatments

Pharmacological treatments for alcoholism have a long history of use (cf. 16,23,206,325), although the effectiveness of such drug treatments is not widely accepted. One reason for questioning their effectiveness is that research on drug treatments has been "careless" (16). In addition, the effects of drugs appear to be closely tied to patient compliance and the use of other therapies. Despite these problems, however, drugs are widely prescribed for alcoholics (as many as 90 percent of physicians in private practice report using medication in their treatment of alcoholism), and the use of drug therapies has been associated with positive treatment outcomes (13,71,72,75).

Considered below is outcome research on two major types of drugs for treating alcoholism: 1) sensitizing agents (e.g., Antabuse®) and 2) mood-altering drugs (e.g., lithium). Excluded from consideration are drugs used in the treatment of alcohol withdrawal and drugs used to manage alcohol-associated medical disorders (e.g., vitamins for vitamin deficiencies). A brief discussion of safety issues is included.

Sensitizing Agents

Treatment of alcoholism with drug agents that sensitize (i.e., make ill) patients who ingest alcohol has become the most common form of treatment. Antabuse® treatment is used as an adjunct in many inpatient and outpatient alcoholism treatment programs and is used in conjunction with a number of therapies. The initial Rand report by Armor and colleagues (13) indicated that 30 percent of all patients studied received Antabuse® at some point in their treatment.

Although there is substantial information about Antabuse®, Becker (23) notes that there is no consensus about its effectiveness. Studies that report effective outcomes (e.g., patients maintaining sobriety) with Antabuse® tend to be uncontrolled. There seems to be clear evidence that older, more stable, and highly motivated people use Antabuse® successfully, and this may explain positive outcomes.

In part, the effects of Antabuse® are difficult to assess because of how the drug is used in alcoholism treatment. The drug makes the alcoholic sick and unable to ingest alcohol, but these effects can be eliminated by the alcoholic's refusing to take the medication. Within 24 to 72 hours after stopping the drug, a user can resume drinking, apparently without having learned to control his drinking behavior. Antabuse® seems to force the alcoholic only to delay satisfying the urge to drink. Since Antabuse® treatment is given in conjunction with other treatments and depends so greatly on voluntary compliance of the patient, its effectiveness may vary widely according to the patient's maturity and the effectiveness of parallel treatments.

Antabuse® does have associated safety problems and can be lethal if ingested with sufficient alcohol. Cardiovascular problems and other chronic disorders are considered contraindicators for its use. Several other drugs (e.g., tramposil, metronidazole) have been proposed as alternatives, but Antabuse® still appears to be the drug of choice for deterring consumption of alcohol while in a treatment program (23). Antabuse® or other sensitizing drugs can reduce drinking while the patient works out his or her problems.

Mood-Altering Drugs

If it is assumed that psychological factors are part of the alcoholism syndrome, it is reasonable to expect mood-altering drugs to have some benefit. Obviously, these benefits will be greatest for those patients for whom psychological problems are most severe. Depression and anxiety are two such problems for which drug therapies have been widely employed.

In one large-scale and methodologically sophisticated study by Overall (235), negative findings

concerning the effectiveness of chlordizepoxide (Librium®) in reducing symptoms of anxiety and depression were reported. Several studies, however, indicate such medications are superior to placebos (16). After detoxification, it is common to prescribe an antianxiety agent, although some question this practice because the alcoholic can also become addicted to these medications.

Studies of the efficacy of tricyclic antidepressants in the treatment of depressed alcoholics report contradictory results: some fail to show beneficial effects from these drugs; others suggest a high rate of improvement with their usage (303).

The evidence regarding the use of lithium has been inconclusive (169,200). Problems include the length of time for the medication to take hold and the dangers of mixing these drugs with alcohol. In addition, lithium requires extremely careful monitoring, which makes its safe usage a complicated process (169).

Self-Help Groups

AA was described earlier as a sociocultural treatment regarded by some people as the most effective form of treatment of alcoholism—more effective than any of the approaches that professionals offer. Various problems, however, with specifying the population that uses AA and a lack of hard evidence make such conclusions regarding AA's effectiveness difficult to verify or discount. Baekeland (16), in his review of literature about AA, reports a 34-percent success rate—much lower than some of the earlier figures. Other reviewers have reported abstinence rates from 45 to 75 percent, depending on the length of the reporting period (173).

The problem in evaluating AA is that its members probably differ from the general population of alcoholics, but data supporting this statement as well as other data about AA are hard to obtain (16). Although a substantial number of regular attendees are abstinent (see 5), it is unclear how this number relates to the number who try the program. Nonabstainers may be subjected to ridicule and reproach by other members, so it is probably more likely than not that individuals who remain in AA for long periods of time are those who have achieved sobriety. It seems clear that some aspects of AA programs have useful therapeutic roles (e.g., getting alcoholics to acknowledge their problem, and providing a support system), but AA may only be applicable to some categories of alcoholics and alcohol abusers.

CONCLUSIONS

Research on treatments for alcoholism and alcohol abuse seems to be in transition. The 1970's saw a number of attempts to summarize conclusions of piecemeal research on treatment conducted during the last several decades. The conclusion of many of these reviews is that treatment seems better than no treatment, but that methodological problems render it difficult to conclude that any specific treatment is more effective than any other. Importantly, however, various treatments—such as aversion conditioning or AA—have been shown to be effective for some patients under some conditions. Given the diversity of alcohol problems and patients, what seem necessary are treatments tailored to specific patients.

What is also clear is that further research must be conducted to test competing claims (111,144). Although some of this research can reasonably be done without direct Government support (e.g., by proprietary organizations), a Federal role seems needed to develop such research. Ideally, both experimental and clinical trial research would be supported. Such methods, although not without their own problems, offer the best hope for providing objective and unambiguous data about treatment effectiveness.

Aside from questions of effectiveness (and, to a certain extent, of safety), efficiency issues must also be addressed. It is clear from even a cursory review of the literature, that the costs of alcoholism and alcohol abuse are very large. As the costs for treatment increase, evidence is needed about which treatments offer the greatest value for the resources required. The research questions regarding such costs and benefits are described in the next chapter.

6.
Analyses of the Costs and Benefits of Alcoholism Treatment

6.
Analyses of the Costs and Benefits of Alcoholism Treatment

This chapter describes the costs and benefits of alcoholism treatment and the issues underlying the reimbursement debate about alcoholism treatment. Its goal is to provide a framework for consideration of Medicare and other reimbursement policy for alcoholism treatment (see ch. 7). The methods of cost-effectiveness and cost-benefit analysis (CEA/CBA) are described, and the costs of alcoholism are analyzed. The present discussion of the costs and benefits of alcoholism treatments extends chapter 5's analysis of the effectiveness of alcoholism treatments. Many of the same methodological problems and caveats apply to analyses of the costs of treatment. Thus, it is necessary to indicate where reliable and valid data are not available and which conclusions must be tentative. Suggestions for the development of research that can assist in reducing this ambiguity are noted.

COST-EFFECTIVENESS AND COST-BENEFIT ANALYSES

Conducting cost and outcome studies of alcoholism treatments is complex and potentially controversial. Clearly, it would be desirable to conduct formal CEAs and CBAs in order to determine definitively which of various treatment alternatives currently available are most effective at particular resource utilization levels. As the Office of Technology Assessment (OTA) noted in its assessment of the methods of CEA and CBA, however, these techniques are probably most useful for structuring policy problems (228). Rarely is it possible to develop CEA/CBAs definitively.

CEAs and CBAs are difficult to conduct with precision, because it is almost impossible to specify comprehensively the costs and benefits of alternative treatments. This is especially true in the area of alcoholism because of the lack of good data directly comparing alternative treatments and because of the difficulties in measuring and specifying outcomes of treatment (see ch. 5). It is also important to recognize that factors other than those that can be quantified in a CEA should be considered in making a policy decision (228).

The potential costs and benefits of alcoholism treatment can be assessed with varying degrees of comprehensiveness, and means for estimating costs and benefits vary. In a CBA, the cost of a treatment program includes not only the direct costs of salaries of treatment providers, medication, administration, and overhead, but also indirect costs, such as lost productivity due to patients' missing time from work. An analyst conducting a CBA must decide which benefits to measure, how to measure them (if measurement is at all possible), and what values to place on those measurements.

Unemployment and lost productivity from alcoholism may, for example, be among the greatest costs of alcoholism, but limiting analyses to work-related measures would underestimate the potential benefits of a program that might aid individuals not currently in the labor force (e.g., the unemployed, full-time homemakers, adolescents in school). For example, Cicchinelli, Binner, and Halpern's output-value analysis (61) (a simplified CEA/CBA) of an alcoholism treatment program indicated that the program was more efficient for men than for women. This finding was due to the average lower cost of treatment for men and the estimated lower salary rates for women. Another finding was that the efficiency of the program tended to decline with severity of impairment. If a choice had to be made concerning which program was more cost beneficial, a decision based

on an analysis which valued benefits either by income gained or by degree of impairment could foster inequities.

OTA has developed 10 principles (see table 4) to guide the conduct, use, and evaluation of CEA/CBA studies (228). The principles most relevant to the assessment of alcoholism treatment programs are that all foreseeable benefits/effects and expected costs should be defined and, if possible, measured; present-value discounting should be performed; sensitivity analyses should be conducted to show a range of possible outcome values; uncertainties should be explicitly and clearly stated; and ethical issues should be addressed. The rigorous specification of data sources for quantitative analyses is another important criterion for CBAs and CEAs. The importance of these principles in the few cost-based alcoholism treatment studies that have been conducted will become apparent when the studies are reviewed later in the chapter.

Despite problems, when CBA is done well, its use aids "the complete enumeration of expected costs and benefits as well as explicit consideration of assumptions underlying quantitative evaluations of the costs and benefits" (310). Assuming such specification is possible, such analyses provide a solid scientific basis to aid in making decisions. Given the substantial variance in alcoholism program costs (e.g., inpatient v. outpatient) and the current policy debate over reimbursement policy, such information would obviously have great utility.

Table 4.—Ten General Principles of Analysis for CEA/CBA Methodology

1. Define problem.
2. State objectives.
3. Identify alternatives.
4. Analyze benefits/effects.
5. Analyze costs.
6. Differentiate perspective of analysis.
7. Perform discounting.
8. Analyze uncertainties.
9. Address ethical issues.
10. Interpret results.

SOURCE: Office of Technology Assessment, U.S. Congress, *The Implications of Cost-Effectiveness Analysis of Medical Technology*, GPO stock No. 052-003-00765-7 (Washington, D.C.: U.S. Government Printing Office, OTA-H-126, August 1980).

To understand what can be obtained from CEAs and CBAs, several distinctions must be made. A CEA implies a comparative analysis of the costs and health effects of alternative treatments. In a CEA, a common outcome is specified (e.g., functional status), and the costs of providing alternative treatments are compared. Treatment costs are typically specified in monetary terms. A CBA, in contrast, requires that both cost and benefits be assigned monetary values. A CBA examines the ratio of resources used (cost) to resources saved (benefits) when particular treatments or even different programs are employed (133). The result of a CBA is usually a net cost-benefit ratio. According to Swint and Nelson (310), CBA is conceptually superior to CEA because: 1) programs with different goals (e.g., alcoholism treatment v. highway improvement) may be compared, and 2) CBA analyzes (in a limited way) whether an objective is worth achieving. Even if a treatment is not cost effective (i.e., other treatments achieve the same outcome equally as well but at a lower cost), the same treatment may still be cost beneficial (i.e., the benefits are greater that the cost).

A further, perhaps technical, distinction must be made about the term "cost." In most CBAs, costs are considered the value of resources used in providing the treatment program (e.g., salaries, overhead, medicine). The social and economic costs incurred because treatment is not given or is ineffective are, for these analyses, considered negative benefits (cf. 225). Whether they are considered negative benefits or additional costs is usually not critical. It is the comprehensive assessment of such effects that is essential for making the best comparison of resources used and saved.

ANALYSES OF THE COSTS AND BENEFITS OF ALCOHOLISM TREATMENT

Cost Context

Evaluating treatments for alcoholism must be done in the context of what has been called the "cost of alcoholism." In 1981, Cruze and associates (78) at the Research Triangle Institute prepared a report for the Alcohol and Drug Abuse and Mental Health Administration (ADAMHA), in which they estimated the cost of alcoholism to U.S. society in 1977 to be nearly $50 billion. As shown in table 5, Cruze and associates divided total costs to society between "core costs" and "other related costs." "Core costs" were those costs most directly related to the alcoholism problem that are borne by some component of the health care system or are the indirect costs of mortality and morbidity (i.e., lost productivity). "Other related costs" included the direct costs of social programs other than those related to health, accident costs, and indirect costs of incarceration and noninjured time loss. The distinctions arise from Public Health Service guidelines for the cost-of-illness studies (137).

Cruze and associates also identified health care settings involved in the treatment of alcohol abusers and determined their alcohol-related expenditures. As shown in table 6, for example, they estimated that to treat alcohol-abuse-specific illness (e.g., alcoholism, alcohol psychosis, cirrhosis) in 1977, alcohol specialty facilities expended about $700 million, and general health facilities spent $2 billion. Another $3 billion was spent for alcohol-related illness and trauma. Cruze's $700-million figure for expenditures by alcohol specialty facilities for alcohol-abuse-specific illness is close to the amount of funding for all alcoholism treatment units reported by the National Institute on Alcohol Abuse and Alcoholism (216).

Table 5.—Estimated Economic Costs of Alcoholism in 1977

		Millions of dollars
Core costs		
Direct:		
Treatment (for alcoholism and causally related illness)		$5,637
Support (research, education and training, construction, insurance administration)		735
Indirect:		
Lost productivity due to:		
Premature mortality	$10,715	
Morbidity resulting in:		
Reduced productivity and lost work time	23,593	
Lost employment	2,481	
	$36,789	36,789
Total core costs		$43,161
Other Related Costs:		
Direct:		
Motor vehicle crashes (funeral, legal/court, insurance administration, accident investigation, vehicle damage)		$1,782
Criminal justice system		1,685
Social welfare program administration		142
Other (fire losses, fire protection, highway safety)		832
Indirect:		
Lost productivity due to:		
Alcoholics' incarceration		1,418
Others' lost worktime because of motor vehicle crashes		354
Total other related costs		$6,213
Total economic costs		$49,374

SOURCE: Adapted from A. M. Cruze, H. J. Harwood, P. L. Kristiansen, et al., *Economic Costs to Society of Alcohol and Drug Abuse and Mental Illness 1977*, final report prepared by the Research Triangle Institute for the Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services, October 1981.

Table 6.—Estimated Health Care Expenditures for Alcohol Abuse in 1977, by Setting (millions of dollars)

Setting	Total expenditures	Expenditures on alcohol-abuse-specific illnesses
Alcohol specialty facilities		
Hospital-based facilities:		
State and county psychiatric hospitals	$200	$200
Private psychiatric hospitals	34	34
Veterans Administration neuropsychiatric hospitals	29	29
General hospitals with separate psychiatric facilities	43	43
Subtotal	$306	$306
Other facilities and services:		
Federally funded community mental health centers	129	129
Residential treatment centers for children	—	—
Halfway houses	37	37
Multiservice mental health facilities	8	8
Other free-standing facilities	198	198
Alcohol specialty units in correctional facilities	3	3
Private practice psychiatrists	18	18
Private practice psychologists	8	8
Subtotal	$401	$401
Total	$707	$707
General health facilities		
Hospital-based facilities		
Community hospitals	$2,274	$880
Veterans Administration general hospitals and other facilities	425	321
Other Federal facilities	149	84
Subtotal	$2,848	$1,285
Other facilities and services:		
Nursing homes	108	98
Private practice physicians	548	16
Dentists	443	195
Other health professionals	133	62
Drugs and drug sundries	525	232
Other health services	222	90
Volunteer services	103	45
Subtotal	$2,082	$716
Total	$4,930	$2,001

SOURCE: Adapted from A. M. Cruze, H. J. Harwood, P. L. Kristiansen, et al., *Economic Costs to Society of Alcohol and Drug Abuse and Mental Illness 1977*, final report prepared by the Research Triangle Institute for the Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services, October 1981.

As can be seen in table 5 drawn from Cruze, lost productivity accounted for the greatest share of the economic costs of alcoholism, followed by costs for treatment, motor vehicle crashes, the criminal justice system, other, and social welfare administration (indirect "other related costs" are included here under productivity)—for a total of about $49.4 billion. Using a double-digit minimum for inflation since 1977 (i.e., an average of 10 percent per year), one can estimate that the current cost of alcoholism and alcohol abuse is $72 billion annually.

Although the double-digit minimum procedure provides a rough total, a more accurate way of assessing the impact of inflation is to make separate estimates for each market segment (e.g., medical costs, education and training, and earnings). If that were done, the costs of treatment would double (both because of inflation and with unreliability), but the costs of motor vehicle crashes would decrease as a consequence of inflation, drinking age increases, tougher drunk driving and safety laws (58), and lowered average driving speeds. Productivity losses would also

decrease slightly because wage increases have not kept up with inflation. Whatever method is used to estimate costs, however, the total cost of alcoholism is substantial and has steadily increased.

The Cruze study, although it used a method that at times significantly departed from earlier studies, yielded a total cost of alcoholism that, when adjusted to inflation, was similar to the estimate of the prior principal study. That study, by Berry, Boland, Smart, and Kanak (29), found the costs of alcoholism to be $43 billion in 1975. However, there were major differences in the two studies' costs by category; for present purposes, the most important of these differences was Berry's estimate of $12 million in health care costs owing to alcoholism and alcohol abuse compared with Cruze's estimate of $5 million.

Cruze and associates used a so-called illness-specific method and thus did not include health care costs of illnesses related to alcoholism or complicated by alcohol abuse. Berry and associates, on the other hand, used a population-specific method whereby they estimated all health care costs incurred by individuals with a history of alcohol abuse, including hospital care, physicians' services, drugs, and nursing home care. They then compared these costs to the per capita rate of health care utilization for the non-alcohol-abusing population. The difference between the two rates was attributed to alcohol abuse and was multiplied by the estimated prevalence of alcohol abuse to produce an estimate of total health care costs caused by alcohol abuse. They also included government public health activities, training, and facilities construction as part of the total health care costs, although these costs were relatively minor.

The primary difference between the Cruze and Berry figures—and perhaps between any estimated and actual health care costs for alcohol abuse—can be accounted for by their differing estimates of the range of illnesses thought to be associated with alcohol abuse (cf. 85). The Berry analysis comes closer to including costs associated with all such illnesses. However, the exclusion of data for family members and victims of accidents related to alcohol abuse, as well as the conservatism of the estimates, probably resulted in an underestimate.

Support for the view that costs are underestimated by these analyses is provided by the Institute of Medicine's report on alcoholism as a health problem (144). In a chapter prepared for the report, it is argued that each of Berry's categories underestimate the populations affected by alcoholism (see 276). In particular, the estimate of health costs did not include costs of related problems (such as fetal alcohol syndrome) and of illnesses not directly related to the abuse of alcohol. The Institute of Medicine indicates that Berry's estimate of the health care costs of alcoholism was understated by 40 percent. Nevertheless, it represented 12 percent of the total national health care expenditures by adults in 1975.

Noting the fact that various studies emphasize the conservative biases of almost all of their estimates, the Institute of Medicine points out that disagreements over details should not obscure "the essential qualitative conclusion" that alcohol abuse imposes very large costs on society (144). The analysis of Schifrin and colleagues (276) for the Institute of Medicine indicated that the 1975 total economic costs could be as high as $60 billion (40 percent greater than Berry's estimate), which would make the 1982 economic costs of alcohol abuse approach $120 billion. Research that could contribute to a lessening of these costs is, in the view of the Institute's panel, seriously underfunded. The Institute notes by way of comparison that cancer research receives 70 times as much money as does alcoholism research in relation to the costs of the illnesses (cancer costs were estimated at $19 billion in 1975; Berry's estimate of $43 billion was used for the costs of alcoholism). In 1978, $627 million was spent for cancer research and only $16 million was spent for alcoholism research.

Assessment of the economic costs of alcoholism and alcohol-related problems is obviously limited by the inability to clearly identify problems directly caused by, rather than merely associated with, alcohol. The prevailing view seems to be that most estimates of these costs are too low, because alcoholism's role in medical problems cannot be fully explicated. The opposite position has also been adopted by at least one analyst (194), who reported in a study for the Distilled Spirits Council of the United States that none of the costs assigned

by Berry and associates could be attributed unconditionally to alcohol use. Such arguments, however, would seem to be diluted by the potential for illnesses to be missed.

One additional type of cost to which researchers invariably allude, but which is particularly difficult to measure, are the indirect psychological costs of alcoholism. Effects on children whose parents are alcoholic, including future losses in productivity (e.g., in children who underachieve because of low self-esteem associated with having alcoholic parents) are also typically omitted from CBAs (78). Even if these psychological costs were identified, their effects on the future (e.g., for productivity) are often exceedingly difficult to measure.

One way of understanding the costs of alcoholism has been noted by Luce and Schweitzer (183). On the basis of 1975 data, these analysts estimated the yearly cost to society for each alcoholic to be approximately $5,000. Luce and Schweitzer's calculation of this figure was based on the assumptions that there were 9 million alcoholics and alcohol abusers and approximately $44 billion in costs to society from alcoholism. If the figure is conservatively adjusted for inflation, the yearly cost for each alcoholic at present is over $10,000. If only a portion of that $10,000 could be recovered by a moderately effective treatment system, it should be possible to achieve significant reductions in the economic, social, and health care costs of alcoholism and alcohol abuse.

Cost-Effectiveness and Cost-Benefit Studies of Alcoholism Treatment

Led by State governments and private industry employers, a number of efforts to expand alcoholism treatment benefits have been developed and studied during the past 10 years. In 1979, Jones and Vischi, ADAMHA staff members, reviewed available literature with respect to alcoholism treatment's impact on medical care utilization and produced a comprehensive review of cost-effectiveness and cost-benefit studies (158). Their review, which included analyses of the dozen such studies then available, found surprisingly consistent results across studies. Each of the investigations Jones and Vischi evaluated found that alcoholism treatment resulted in a significant reduction in medical care use and expenditures. The median reduction in sick days and accident benefits was 40 percent.

From a technical point of view, the 12 studies reviewed were principally cost-benefit rather than cost-effectiveness studies. Their focus was on the benefits of alcoholism treatment in terms of externalities (rather than a comparison of treatment effectiveness according to cost). Not all the studies concluded with a cost-benefit ratio, although most could have. In several of the studies reviewed, a benefit was established only when partial effects (e.g., reductions in sick leave, net reductions in health care costs or effects of improved health status on others) were considered.

Unfortunately, methodological problems were present in each of the studies reviewed by Jones and Vischi. One difficulty was a treatment design problem. Most studies were conducted in employee-based alcoholism programs or in organized health care settings, particularly health maintenance organizations (HMOs). Such programs and settings have particular economic incentives and tend to emphasize treatments that are low cost and do not take individuals away from their work. All 12 of the studies were flawed by their failure to identify medical utilization outside of the study (e.g., in HMOs, by private practitioners) because they used nonequivalent comparison groups (i.e., quasi-experimental design). The studies also failed to control or adjust for increases in pretreatment medical utilization caused by the referring visit. In general, the studies were of short duration (1 year or less) and used limited treatment outcome measures.

Nevertheless, the existence of positive results across 12 studies conducted by independent investigators in different settings gives added weight to the conclusion that alcoholism treatment is cost beneficial. Four representative studies reviewed by Jones and Vischi and two studies completed subsequent to their review are further described below.

Philadelphia Police and Fire Departments

Jones and Vischi (158) reviewed two studies conducted in Philadelphia, one with the police

department (319) and one with the fire department (318). The results of both studies illustrate not only the potential benefits of alcoholism treatment programs, but also the problems in developing definitive statements about the results of such programs.

In both programs, a counseling service was set up for employees with alcohol and other drug, mental health, or financial problems. An insurance program paid for hospitalization and rehabilitation where referrals were made. The studies included a relatively small number of individuals: 170 police officers and 77 firefighters. In both groups, only a small group actually accepted and received treatment other than brief counseling.

The findings in both studies are relatively consistent. The number of sick days and days lost due to injury following counseling or inpatient or outpatient care for alcoholism sharply declined. The data indicate that the more intensive the treatment, the better: the inpatient group showed the largest reduction in sick and injured days; the outpatient group, the next largest reduction; and the group that only received counseling, a smaller decline (to a level below the average rate for police and firemen).

In cost effectiveness, outpatient programs appeared to have an advantage. For the police program, the ratio of savings (savings were equated with the dollar value of reductions in sick leave minus the costs of counseling) for outpatient treatment to costs for outpatient treatment was 3:1; for the fire program, the ratio was 1.5:1. For inpatient treatment, the benefit-cost ratios were 0.9:1 (police) and 0.25:1 (fire). According to Jones and Vischi, the poor cost savings of the inpatient fire program may be attributable to the program's practice of assigning only the worst cases to inpatient treatment. Overall benefit-cost ratios were 1:1 (police) and 0.45:1 (fire).

Despite these seemingly positive results, any conclusions from the Philadelphia studies are clouded by the exclusion of variables on both sides of the benefit-cost equation. On the benefit side, savings were calculated only for the departments involved and not for the individuals or insurance companies. On the cost side, inpatient costs apparently included only the cost of sick leave and not the costs of treatment beyond counseling. Without more comprehensive data, the relative cost effectiveness of the treatment settings cannot be determined in any definitive way.

The Philadelphia studies also lack a control group and random assignment of participants to treatment. It is not clear whether declines in sick days and injured days are merely a regression toward the mean phenomenon (extreme responses should naturally become more average over time, hence regression to the mean (67) or whether they represent the direct effects of counseling and treatment. It is, of course, suggestive of the causal relation that most posttreatment rates (e.g., injured days per year for police, both sick and injured days per year for the fire program) were below rates for average police and firemen. However, statements concerning cost effectiveness are limited by the exclusion of data on the costs of inpatient care and insurance premiums on the cost side and of posttreatment medical use on the benefit side.

General Motors

Jones and Vischi (158) also reviewed Lunn's study (185) of a program for General Motors employees in Canada. This study used an untreated comparison group. Approximately 100 employees who were interviewed by the company doctor and referred to treatment were compared to approximately 50 employees who were similarly referred but did not undergo active treatment. During the time of treatment (not specified), the experimental group's use of sickness and accident benefits declined by 48 percent, while the comparison (untreated) group's use increased 127 percent.

Although the changes in utilization rates are significant, it is not clear whether the groups were really comparable. Post hoc analyses indicated that there was a significant difference in the level of use of health benefits prior to entry into treatment. Differences in outcomes between groups may just reflect the doctors having "caught" alcoholics at different stages in their illnesses. The comparison group appears to have lagged behind the study group by about a year in the severity of the impact of their alcoholism.

California Pilot Program

The so-called California pilot program study (139) reviewed by Jones and Vischi (158) was designed, in part, to investigate whether health insurance coverage for alcoholism treatment had any impact on overall health care use and expenditures by alcoholics and their families. Although study conclusions are limited by the failure to present data on a comparison group of untreated alcoholics, strengths of the study include the inclusion of costs and benefits in monetary terms and the inclusion of treatment provided in both organized and unorganized care settings, on both prepaid and fee-for-service bases.

Alcoholism benefits in the California pilot program were provided through three different insurance carriers to a study group of 240 families that had at least one alcoholic member. The benefit consisted of a maximum of 6 days of detoxification, 21 days in a general hospital or specialized alcoholism treatment center, 30 days in a recovery home or other residential facility, and 45 outpatient visits. Mean monthly medical utilization and costs for alcoholics and their family members were collected for 12 months prior to treatment and from 3 to 20 months after treatment. Results differed by carriers, setting, and person treated (alcoholics v. family members). Overall results from reduced medical use indicated a savings of $46 per alcoholic per month. Extrapolated to the alcoholic population of the entire pilot program, estimated savings equaled $280,000, or 41 percent of the total cost of the pilot program.

Blue Cross/Blue Shield, the carrier that had been the most restrictive in its alcoholism coverage prior to participating in the California pilot program, experienced a 41-percent decline in posttreatment average medical costs per month. The least restrictive carrier experienced a large (134 percent) increase in medical costs for alcoholics, although this increase may have been attributable to a skewed sample. Among the notable effects for all providers was a substantial posttreatment decrease in alcoholics' use of inpatient treatment and an increase in use of less expensive forms of care, such as outpatient treatment. However, the length and average cost per posttreatment inpatient stay across all providers increased for alcoholics (length of stay increased an average of 50 percent, from 2.3 to 3.5 days; cost increased by 34 percent, from $575 to $771). On the other hand, these utilization rates and costs decreased for other family members.

A followup study (138) published in 1981 indicated substantial fluctuations in costs and utilization over a 5-year period. By the end of the fifth year, however, medical care utilization by alcoholics and their family members had declined, and both utilization and costs were lower than those of control group members. Results such as these indicate the importance of longitudinal studies. The problems of alcoholics and their families are both deep-seated and longstanding, and effects may take considerable time to appear. When treatment becomes available, previously hidden problems may be uncovered and presented for treatment; however, research indicates that eventually such treatment pays off, as less and less care is needed over time.

An additional important finding of the California pilot program study was the posttreatment decrease in diagnoses often reported for getting alcoholism treatment when such treatment is not legitimately reimbursable. Before the pilot program began, 91 persons had been diagnosed for gastrointestinal, psychiatric, and other alcohol-related illnesses; subsequent to treatment, the number was 20.

Group Health Association

The most extensive study of the cost effectiveness of providing alcoholism treatment benefits was available only in partial form at the time of Jones and Vischi's review (158), but has since been completed. The study, conducted by the Group Health Association of America (GHAA), was a 7-year study by Plotnick and associates that evaluated the feasibility of providing comprehensive alcoholism treatment programs in four HMOs (247). The programs were outpatient oriented, but each attempted to provide comprehensive and continuous treatment services. The investigators collected and analyzed data on patient functioning, health status, and treatment use for over 2,000 patients. Of the subjects in the study, 1,033 were alcoholics in treatment; others were spouses,

family members, and a group of nonalcoholic HMO members matched by age, sex, and length of membership in the HMO.

GHAA (247) found that outpatient-oriented alcoholism treatment programs appeared to be both effective and cost-beneficial. Patients in treatment over a 3-year period declined in their use of alcohol by 65 percent after 6 months and by approximately 70 percent after 2 years. Alcoholic patients also increased their length of abstinence from 8 days at intake to 19 days after 6 months, remaining at 19 or 20 days throughout the 3-year follow-up. Patients also showed improvement on work-related dimensions as measured through reduction in reprimands (75 to 90 percent) and days sick or absent from work (an average of 50 percent).

These improvements paralleled improvements in measures of medical care use. Alcoholic patients reduced ambulatory health care service use between 11 percent (after 6 months) to 30 percent (after 4 years). These patients also showed an immediate decline in the percentage of emergency care visits (from 31 to 9 percent after 6 months) and an increase in the percentage of regularly scheduled visits (from 59 to 78 percent after 6 months). However, alcoholics used more ambulatory care services than did the members of the comparison group. Relative utilization went from seven times as many encounters with health care providers to three times as many encounters over 4 years of study.

Hospitalization experience was less positive in the GHAA study (247). There were modest reductions relative to matched groups in three studies and an increase in a fourth site that was cautiously attributed to demographic characteristics of the sample. Furthermore, there was a substantial "peaking" phenomenon in one site at which utilization was measured frequently, with one increase in length of stay among alcoholics at 6 months before intake and another increase, though less dramatic, 24 months after intake. Plotnick and colleagues attribute this increase, and the high utilization rates overall, to the chronic and severe health problems generally experienced by alcoholics.

Because of methodological problems, it is unclear whether the small number of subjects or prior patterns of hospitalization account for the differences. The GHAA study (247) was limited by the fact that it compared alcoholics receiving treatment to a population of individuals who were presumably relatively free of alcoholism problems. It also did not directly compare outpatient alcoholism treatment with inpatient treatment, since the HMOs had previously concluded that outpatient treatment was more cost effective. Finally, cost data could not be included in the results of the study; because of their prepaid nature, HMOs seldom focus on costs per service. An analysis of costs by department, done by one of the HMOs participating in the GHAA study, was reviewed for alcoholism treatment effects by Plotnick and associates. They found no cost savings in health care utilization. It is noteworthy, however, that all of the HMOs involved in the 1982 study have decided to continue providing alcoholism treatment services.

U.S. Air Force

Orvis, Armor, Williams, Barras, and Schwarzbach (234) compared the cost-effectiveness of inpatient, outpatient, and education-only treatments for U.S. Air Force personnel in a nonexperimental clinical trial. Twenty-eight days of inpatient care at an Air Force Alcohol Rehabilitation Center cost $3,000; 10 sessions of outpatient care cost $900; and a series of awareness seminars cost $60 per person. Much of the inpatient cost was attributable to lost work time. Direct costs were $1,705 for inpatient treatment, $649 for outpatient treatment, and $28 for alcohol awareness seminars.

The CEA consisted of estimating the annual cost savings per capita for those severely and moderately impaired and comparing the savings to the cost of treatment. Using this method, it would take 4 years for a 28-day inpatient treatment for the severely impaired to pay for itself, compared to a little less than 2 years for outpatient treatment to pay for itself. For nondependent alcoholics, it would take longer. These figures, based on the equivalent effectiveness of all treatment

contexts, result in an average 50 percentage point reduction in problems for all participants and no statistical differences in remission rates, which were between 70 and 80 percent. However, while these figures are suggestive, the fact that patients were not randomly assigned to treatments and that most clients received a combination of all types of treatment somewhat limits the usefulness of the study.

CONCLUSIONS

There is some evidence to support the hypothesis that alcoholism treatment is cost-beneficial. The benefits of alcoholism treatment, even if they fall short of what may be claimed, seem to be in excess of the costs of providing such treatment. It is difficult from the available evidence to determine the relative effectiveness or cost effectiveness of inpatient v. outpatient treatment; it is also difficult to determine how changing the mix of providers or types of treatments would affect either effectiveness or cost effectiveness. Because different groups receive different treatments, there is an inherent methodological difficulty in interpreting most of the available research.

It does seem clear, however, that many alcoholism treatment services are not cost effective—i.e., there are less expensive ways of providing treatment than are reflected in current reimbursement policy. However, reimbursement systems, particularly the Medicare and Medicaid programs, have overwhelmingly emphasized the most expensive treatment services—inpatient, medically based treatment.

Questions about the wisdom of this approach have resulted in recent changes in private reimbursement systems as well as clarification of Medicare policy, and an attempt to systematically evaluate whether changes in policy would result in health care cost savings. Some of these issues are addressed in the following chapter.

7.
Reimbursement Issues

7. Reimbursement Issues

The development of the current system for treating alcoholics and alcohol abusers has been closely tied to funding and reimbursement policies of both private and governmental insurance programs. Since the acceptance of alcoholism as a disease over 25 years ago, an elaborate medically based treatment system for alcoholism has evolved. In some cases, development of treatment services has preceded reimbursement policy; in other cases, however, treatment seems to have developed around what is reimbursable.

In recent years, a number of private insurance companies, employers, and the Federal Government have expanded benefits for alcoholism treatment. Reimbursement for acute medical care as well as inpatient treatment for alcoholism is currently available, although coverage is not universal. Non-hospital-based treatments, including outpatient care, aftercare, and non-medically-oriented residential care, are less frequently reimbursed, although there is a trend toward developing such benefits (341). Thirty-three States currently mandate some form of coverage by health insurers for alcoholism treatment (283).

Recent emphasis on expanding insurance benefits for alcoholism treatment (see, e.g., 211) stems from a belief, supported by the evidence in chapter 6, that **the costs of not providing alcoholism treatment are greater than the costs of providing such treatment** (11,216,274). Whether alcoholism treatment should be reimbursed at all, therefore, does not seem to be at issue. The essential question at this point seems to be whether current reimbursement policy supports the provision of the most cost-effective treatments. As discussed in chapter 6, several cost analyses have been conducted that indicate the beneficial effect of alcoholism treatment, yet several issues need to be addressed in greater depth: questions about whether ineffective treatments are being employed and concerns about whether lower cost treatment alternatives (such as nonhospital care) are available to treat alcoholics but are not being used.

The Nation's health care budget has expanded to almost 10 percent of the gross national product, and although efforts have been made to improve benefits for alcoholism treatment, increasing such benefits conflicts with needs to reduce health care expenditures. There is an obvious need to develop a more efficient treatment system to treat alcoholism—with such a system, it is less likely that services will be denied to a large number of people or that costs will be prohibitive. The issues of reimbursement policy are complex, however, and changes in policy not only affect alcoholic patients, but have widespread implications for the costs and treatment of all health problems.

OVERVIEW OF FUNDING OF ALCOHOLISM SERVICES

The Federal Government has a substantial stake in the funding of alcoholism treatment services. An estimated two-thirds of the direct costs of alcoholism treatment programs are paid for through Federal, State, and local government programs (217; see table 7).

Federal programs include employee-benefit insurance packages such as the Federal Employees Health Benefit Plans; services provided by the Armed Forces and Veterans Administration (VA) hospitals, including the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS); and, until recently, programs funded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) (now incorporated in block grants to States). In addition, and most important for present considerations, the Medicare program pays substantial amounts for the treatment of alcoholism, as do most State Medicaid programs (217).

In fiscal year 1982, Medicare paid an estimated $150 million to treat alcoholism and alcohol-based

Table 7.—Sources of Funding for Alcoholism Treatment Units in 1979[a]

Source of funding	Amount (millions)	Percent
Government		
NIAAA[b]	$71	7.5%
Other Federal[c]	102	10.9
Third-party (other than private):		
State or local government fees for service	38	4.0
Title XX	35	3.8
Public Health Insurance and Welfare[d]	80	8.5
State government	206	21.9
Local government	97	10.3
Total government		66.9%
Private		
Third-party private health insurance	$184	19.6%
Donations	22	2.4
Total private		22.0%
Other		
Client fees	$94	10.0%
Other	12	1.3
Total	$941	100.0%

[a]Reported by 4,311 alcoholism treatment units that reported funding information to the National Drug and Alcoholism Treatment Survey (NDATUS).
[b]NDATUS reports that NIAAA figures were underreported by alcoholism treatment units.
[c]Includes sources such as the National Institute on Drug Abuse, Bureau of Prisons, Veterans Administration, Drug Enforcement Administration, Bureau of Community Services, Law Enforcement Administration, and National Institute of Mental Health.
[d]Includes sources such as CHAMPUS, Federal Employees Health Benefit Plan, Medicare and Medicaid, and local general assistance programs.

SOURCE: National Institute on Alcohol Abuse and Alcoholism, Alcohol, Drug Abuse, and Mental Health Administration, Department of Health and Human Services, *National Drug and Alcoholism Treatment Utilization Survey* (Rockville, Md.: National Institute on Alcohol Abuse and Alcoholism, June 1981).

disorders (99). Extrapolating from comparable figures for 1979 suggests that approximately 90 percent of this total was spent for institutional care alone; the remainder was paid to physicians for their services (80). In a 20-percent sample of elderly Medicare patients, alcoholism was the 18th most frequent discharge diagnosis (269). Persons aged 65 and over accounted for over one-quarter of all discharges and over one-third of patient days of care in all non-Federal short-stay hospitals (212). Almost 9 percent of those aged 64 and over who used psychiatric facilities were diagnosed with alcohol disorders (223). The percentage of alcoholics aged 64 or over in VA hospitals is estimated to be 16 percent (223).

Ninety-five percent of those aged 65 and over are covered by Medicare (269). However, only 15 percent of all elderly problem drinkers appear to be receiving any type of treatment (259). For alcoholics receiving Medicare-funded inpatient treatment in 1977-78, the average charge per patient day was almost $170, and the average length of stay was over 7 days, yielding a total average cost per discharge of nearly $1,200 (269). Thus, the charges for alcoholism treatment under the Medicare program have been considerable and are potentially very large if inpatient treatment were widely used. These figures do not include treatment for patients in noninstitutional settings or for those with other primary disorders, although it is clear that alcoholism plays a central contributory role in a variety of ailments that affect the elderly, particularly cardiovascular disease, gastrointestinal problems, and cancer (85,276, 347). Alcoholism and alcohol abuse, as noted above, may be the primary reason an individual comes to the hospital, may add medical complications to treatment, and may interfere with normal recovery processes. For elderly individuals, the latter problems may be severe, and very costly to the Medicare system.

HISTORY OF BENEFITS FOR ALCOHOLISM TREATMENT

Insurance benefits for alcoholism treatment are increasingly being provided by private carriers and Government insurance programs. The development of such benefits is fairly recent. A review of how the current system evolved may be useful for understanding the present policy debate about alcoholism treatment coverage under Medicare.

Medicare

Medicare is a nationwide, federally administered health insurance program authorized in 1965 to cover the costs of hospitalization, medical care, and some related services for eligible persons over age 65. Since its inception, Medicare has not spe-

cifically provided benefits for the treatment of alcoholism. Rather, under the hospital insurance component of Medicare (Part A), alcoholism is treated as a psychiatric disorder under the general category of psychiatric health services; its hospitalization benefit for a psychiatric disorder in a psychiatric hospital is limited to 190 days per lifetime. For treatment of alcoholism in the psychiatric ward of a general hospital, on the other hand, the standard (physical illness) Part A Medicare reimbursement and coverage provisions apply: 90 days of hospital care in each benefit period with $304 deductible, and 25-percent copayment after 60 days, as well as a lifetime reserve of 60 days with a 50-percent copayment. According to NIAAA (223), the original limitation on psychiatric care was to avoid Medicare's reimbursing "custodial care," since Medicare was intended only to insure against illnesses that were being actively treated.

The supplementary medical insurance component of Medicare (Part B) provides partial coverage for outpatient psychiatric services. The formula is complicated, but it results in a 50-percent coinsurance benefit with a maximum reimbursement of $250 per year. For physical illness, however, Medicare pays 80 percent of a physician's reasonable charge after a $75 deductible. Although outpatient psychiatric services are limited to a maximum reimbursement of $250 a year, there is no limit on reimbursement for physicians' services for medical or psychiatric care while a patient is in a psychiatric ward of a general hospital. The original limit on coverage of outpatient care was consistent with such limits by private insurers.

The Medicare program essentially funds providers who are physicians or are under the direct supervision of a physician performing services incident to those of a physician. This has meant that many non-acute-care facilities and treatment centers that offer non-physician-based care have not been eligible for reimbursement under the generic statutes of the Medicare program. Until recently, many such programs were funded directly by NIAAA.

Medicaid

The Medicaid program provides medical assistance to low-income individuals and families. Treatment costs are shared by the States and the Federal Government. Each participating State (all States except Arizona) must provide certain basic health services, according to Medicaid regulations. States, however, have substantial leeway concerning specific coverage and interpretation of regulations.

According to NIAAA, a major limitation in the Medicaid program (by statute) is the exclusion of Federal financial participation for care in psychiatric institutions for persons between the ages of 22 and 64 (216). With respect to other treatment settings, Medicaid may theoretically provide more options for treatment, although Medicaid statutes do not specifically mention alcoholism treatment. For example, States have considerable latitude in defining physician participation. Services need not be those incident to a physician's, and clinics may be reimbursed for the services of paraprofessional rehabilitation counselors (130).

In 1978, Medicaid provided 6 percent ($5 million) of the total receipts of NIAAA-funded alcoholism treatment centers (100). Information concerning how much Medicaid provided to other alcoholism treatment services is not readily available (130). In one study, now several years old, the investigators found that 4 of the 45 State plans they reviewed referred specifically to treatment for alcoholism: 2 of the 4 allowed coverage, 1 explicitly excluded coverage, and 1 limited coverage to detoxification (37). Eight other States were found to have plans providing a relatively favorable environment for inpatient alcoholism treatment coverage, and 23 States were found to have plans providing a relatively favorable environment for outpatient services. Annual levels of reimbursement for alcoholism treatment, when reported, were generally low (e.g., in 1978: $45,000 in Mississippi, $800,000 in Maine, $1,409,000 in Washington), except in New York ($32.1 million). A survey conducted by NIAAA in 1976 (215) indicated that all State Medicaid

agencies reimbursed for inpatient care of organic illnesses related to alcoholism, and a majority reimbursed for outpatient care for such illnesses. However, a substantially lower proportion of State Medicaid agencies reimbursed for the treatment of alcoholism itself, especially when that treatment was not in a medical setting (130).

Other Coverage

According to the the National Drug and Alcoholism Treatment Utilization Survey (NDATUS), State governments provided $206 million in tax-derived funds to alcoholism treatment centers in 1980, or 21.9 percent of the total funds (217). Local governments contributed $97 million, or 10.3 percent of the total. Although the States constitute the largest single source of funding for alcoholism services, they typically do not operate treatment programs directly; the States' role consists of allocating resources from various funding sources to local programs (215). In addition, some States (e.g., California) have developed statewide alcoholism health insurance programs for their employees; and increasingly, State legislatures are considering mandating, or requiring as an option, insurance coverage for alcoholism treatment. By September 30, 1981, such legislation had been enacted in 33 States, had been defeated in 14, was being considered in 2, and had not been considered in only 1 State (283).

Prior to 1972, the explicit exclusion of alcoholism treatment was standard in private insurance policies, although treatment was often covered under other diagnoses (341). Even though progress has been made, very few plans cover alcoholism on the same basis as other illnesses (341). Generally, outpatient care must be provided at a hospital, and is subject to a 50-percent copayment provision as well as an annual maximum. There is often a lifetime maximum as well (341). These restrictions are reflected in the fact that while 21 to 85 percent of those served in NIAAA programs in 1976 had some form of health insurance, only 10 to 45 percent had coverage for alcoholism services (69). The demographic makeup of the NIAAA population makes it particularly likely to be underserved (332). Private health insurance provided 19.6 percent of the funding for alcoholism treatment units in the 1980 NDATUS (215).

CURRENT DEVELOPMENTS IN BENEFITS FOR ALCOHOLISM TREATMENT

The current reimbursement system is undergoing rather significant change, as pressures brought about by rapidly escalating costs and reduced revenues have forced rethinking of reimbursement policy. The Medicare program, which is the responsibility of the Federal Government, has come under close scrutiny along with programs funded by other Federal legislation and programs funded by State and private agencies.

New Medicare Guidelines

Policy with respect to Medicare reimbursement is currently undergoing change. A series of studies found that medically based inpatient care was far more expensive than nonmedically based inpatient or outpatient care (see reviews by 126, 223). Furthermore, as shown in chapter 5, research evidence had not proven the superiority of the more expensive types of care.

As of September 1, 1982, the Health Care Financing Administration (HCFA) had implemented new Medicare guidelines specifying treatment of alcoholism in outpatient facilities and placing limits on inpatient treatment and treatment consultation with family members. Earlier guidelines had not specifically referred to hospital-based outpatient treatment; the new guidelines make it clear that such services are covered when reasonable and necessary and incident to a physician's services. Outpatient treatment in free-standing clinics is also made available, with the same restrictions.

The rules for inpatient treatment were relaxed somewhat in that patients need not be experiencing severe medical complications at the time of

admission to be eligible for inpatient medical detoxification; however, the probability of such consequences occurring is necessary for reimbursement. The new Medicare guidelines also require that coverage of alcohol detoxification and rehabilitation are to be addressed separately (i.e., a patient who requires the hospital setting for detoxification may not necessarily require it for rehabilitation). Presumably, this requirement will reduce the number of patient days spent in inpatient facilities.

The guidelines also require a closer look at the safety and feasibility of chemical aversion therapy in individual cases, a topic of some recent controversy. Currently, electrical aversion therapy is excluded from coverage on grounds of safety and ineffectiveness although the Public Health Service is coordinating an assessment of what is known about the technique (98). Family counseling is to be limited to those cases in which the primary purpose of the counseling is the treatment of the patient's condition. Despite the fact that inflation has effectively halved the benefits available under Medicare (131), no changes were made in reimbursement rates.

Other Developments in Treatment Financing

There have been no changes in Medicaid regulations, but because of changes in Federal grants, States have more latitude in deciding how Federal funds are spent; at the same time, they have fewer funds. In fiscal year 1982, 35 percent of the subblock grant for alcoholism, drug abuse, and mental health had to be allocated to alcoholism; in 1983 and 1984, funds may be transferred by the States from alcohol and drug abuse to mental health (53). In fiscal year 1981, block grant allocations for alcohol, drug abuse, and mental health services were found to be 20 percent lower than the levels of predecessor categorical programs; in the first 6 months of the new block grant program, 15 percent of alcoholism, drug abuse, and mental health grants had been drawn by the States (110).

An interesting development is underway with respect to a major Federal health program, CHAMPUS. CHAMPUS has recently proposed rules* to alter coverage of alcoholism treatment services. The proposals are based, in part, on several panels established by CHAMPUS to consider its mental health benefits. Under the proposed rules, alcoholism treatment will be reimbursed for emergencies or for complications on an inpatient basis. For rehabilitative care, treatment will be authorized in approved hospital-based or free-standing clinics. Included are a variety of treatments offered in residential or outpatient settings. Aversion therapy is specifically not authorized under the proposed rules.

With respect to private health insurance coverage, the trend is toward increased coverage in free-standing centers, provision of treatment equal to that for other diseases, and provision of coverage for family counseling and care. Model legislation to this effect has been developed by the National Association of Insurance Commissioners, although it has not been enacted (211). Under terms of the model legislation, coverage would be a required option rather than a mandated inclusion.

*See *Federal Register*, 47(179):40644-40650.

RESEARCH DEVELOPMENTS

It is obviously difficult to determine at this point the impact of the new Medicare regulations and other developments in treatment financing. The developments come, however, at the same time that HCFA and NIAAA are engaged in a joint alcoholism services demonstration project. The purpose of the project is to expand Medicare and Medicaid benefits to alcoholism treatment providers with the emphasis on less costly settings, such as free-standing inpatient and outpatient facilities and halfway houses. The demonstration has also been designed to test the effectiveness of using nonmedical personnel in the treatment of alcoholism.

The project is a 4-year demonstration, with HCFA financing treatment costs and NIAAA providing administrative and evaluative services. Seven States are participating in the program, and approximately 120 providers are treating 5,200 patients in the first year. Although the original intent of the demonstration was to fund programs not eligible under the Medicare and Medicaid formulas, there will be some overlap because of the recent changes in regulations.

Independent evaluation of the demonstration program is being conducted (see 99; 154), although at this point the specifics of the design have not been agreed to by NIAAA and HCFA staff (154). Because of the way in which the demonstration projects were funded, the design will necessarily be quasi-experimental; that is, patients will not be randomly assigned to particular facilities, service providers, or treatment modalities. Instead, the research will track patients from their entry in the programs for a 2- to 3-year period. It may be possible, as well, to collect comparison group data. The design calls primarily for collecting cost information about the use of medical services. Program experience for 2 years prior and 2 years subsequent to the inception of the demonstration project will be assessed.

IMPLICATIONS OF CURRENT DEVELOPMENTS

Reimbursement systems, particularly the Medicare and Medicaid programs, have emphasized inpatient, medically based treatment for alcoholism. Although there may be some patients for whom such intensive treatment is necessary and appropriate, it is also true that there are many for whom it is not appropriate. In fact, because of the stigma and time required to be treated in an acute care facility, many will not seek such treatment.

The evidence does not seem strong enough, however, to support further restricting benefits for inpatient services. Since it would not be possible to restrict acute care admissions, the likely result of not funding residential or free-standing treatment settings would probably be to increase use of acute care facilities. This situation might result if alcoholic patients were admitted under other primary diagnoses.

The best strategies would seem to be ones that encourage early outpatient treatment and continuing aftercare service on an outpatient basis (260). Given both research evidence that does not clearly indicate the necessity of inpatient care and the lower cost of outpatient treatment, such a strategy might lead to better use of health care resources. The recent changes in Medicare guidelines appear to be consistent with this direction (see, also, 81). Reimbursement criteria for inpatient services are tightened, while the availability of reimbursement for outpatient treatment is increased. The new guidelines also allow for nonmedically trained personnel to be more involved in treatment.

Although it appears that the new guidelines will have positive effects in making the treatment system more efficient, it may be difficult to determine, even in a crude way, the impact of these changes. They are being introduced nationwide and at a time when the health care system and the economy are undergoing major changes. There will be no comparative data on whether and how they are effective. In addition, because the responsibility for a majority of alcoholism treatment services has been transferred from the Federal Government to the States, national data may no longer be available. It may be unclear whether the new regulations simply make possible the treatment of a larger group of alcoholics and alcohol abusers, whether their use of the benefit represents changes in the diagnostic labels given patients, and whether they achieve the intended effect of the legislation.

In light of the above, the demonstration program being carried out by HCFA/NIAAA assumes even greater importance. It is unfortunate that this study is not being done in a more experimental way and that plans for data collection are not further developed at this point. The demon-

stration project represents an important opportunity to collect data about the optimum treatment for alcoholism. The failure to take advantage of this opportunity may mean an even longer delay in understanding the impact of existing policy.

CONCLUSIONS

Alcoholism treatment has evolved slowly but steadily over the last 30 years in conjunction with the medical system. Although the evidence is not without methodological problems, it seems clear that alcoholism treatment has demonstrable benefits. The hypothesis that alcoholism treatment is cost beneficial seems more strongly supported than alternative hypotheses. However, the Medicare system needs adjustment in order to encourage less costly and more effective forms of treatment.

The most recent changes in Medicare guidelines seem a necessary and correct step in this process. It is possible, if inpatient treatment were further restricted, that alcoholic patients would be admitted to acute care hospitals under other primary diagnoses. The additional costs of such a development are clearly impossible to estimate. It would seem reasonable not to change eligibility standards further, however, until more information is available to indicate the effects of recent evolutionary changes in the reimbursement system. To the extent that research evidence can be developed (111, 144), reimbursement decisions can be made with more confidence.

Appendix

Appendix.—Health Program Advisory Committee and Acknowledgments

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